Public Utilities

FORTNIGHTLY

Volume XLII No. 3 July 29, 1948

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RELATIONSHIP OF THE POWER INDUSTRY TO NATIONAL DEFENSE
By J. W. Swaren

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Customer Ownership of Public Utility Securities
By Ernest R. Abrams

« »

Is Long-distance Electric Power Transmission Economical?
By R. C. Buell

« »

Single Purpose Flood Control Pays Off in Ohio Part II.
By John P. Callahan

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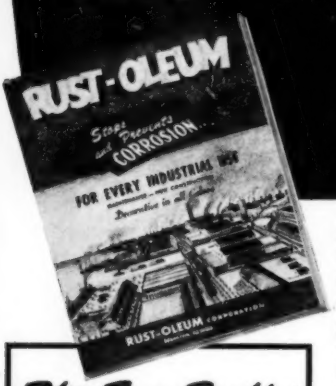

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Public Utilities FORTNIGHTLY

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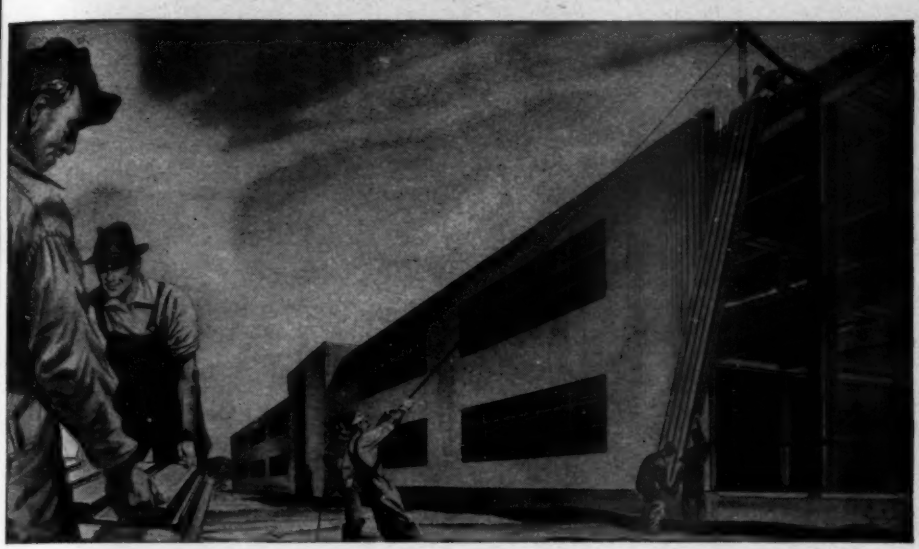

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Pages with the Editors

DESPITE the explosive potentials of the Berlin crisis, representatives of six western powers continue to "explore" at a diplomatic tempo the question of American military backing for a western European alliance.

ONE other development was the Senate's adoption on July 11th by a 64-to-4 vote of a resolution sponsored by its presiding officer and Foreign Relations Committee chairman, Senator Vandenberg, Republican of Michigan. This recorded the Senate's approval of all "regional and other collective arrangements for individual and collective self-defense" that are in accord with "the purposes, principles, and provisions" of the United Nations Charter.

IT also advised the President, to whom the Constitution gives command of foreign policy, that the present Senate favors "association of the United States" with such regional "self-defense" alliances.

WITH the United States being thus thrown into the definite possibility of collective commitments with western Europe, the question naturally arises in the minds of American industry, generally, just what is the state of the nation's defenses on the home front? We have heard much of guided missiles and "push button" war. We have been told about the possibilities of an atom blitz and have read much speculation about whether our potential enemies in eastern Europe have developed the resources and "know how" to stage any such ultra modern type of warfare at such long range.

BUT will the next war—if it must come—be such a sudden, terrible flash of destruction? Or will it have a prelude of various ominous "incidents"? Is there anything industry can do, at this time, to aid its own defenses and assist the striking power of our own armed forces?

J. W. SWAREN

Interesting answers to these serious questions are to be found in the leading article in this issue by J. W. SWAREN, technical analyst of the Industrial College of the Armed Forces at Fort Leslie McNair, Washington, D. C. MR. SWAREN is a civil engineer who started his professional career with an electric utility before the turn of the century—the Robinson Electric Light Company, Robinson, Illinois. During World War I he was commissioned Captain and Major in the U. S. Corps of Engineers, and retired from active service in 1927. He has been consultant with the Armed Forces since 1945. He has written over 200 articles in technical periodicals.

* * * *

ANOTHER problem that will doubtless engage the attention of both the electric power industry and the military in mobilizing for national defense is the economy of long-distance power transmission. MR. SWAREN's article develops the desirability of dispersing power-generating facilities in such a way as to avoid the vulnerability of congested manufacturing areas. Over and above that is the desirability of dispersing vital industry itself, which, in turn, means the

Notice

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necessity of servicing such dispersed industry with public utility facilities. Then, too, there is the long-range complication of atomic energy generation which suggests the use of long-distance transmission so that radioactive generating centers can be kept at a safely remote distance from our large cities.

DEALING specifically with the problem of long-distance power transmission economy, we have in this article, beginning on page 153, what is in substance a study originally presented to the Boston section of the American Institute of Electrical Engineers by R. C. BUELL of the General Electric Company, Schenectady, New York. The day is gone when the choice of long-distance transmission *versus* local or short-range generation was a problem solely for the decision of the plant engineer. Today the front office executive, financial and public officers, economists, and others who have some responsibility in the decision of system planning must give this important matter attention.

MR. BUELL has been with General Electric since 1921, working especially on the theoretical study of transmission problems and inter-connection.

* * * *

IF, to paraphrase Edmund Burke, the only successful way of coping with the problems of the future is a careful study of the past, the recent suggestion in utility industry circles for a revival of customer ownership in the distribution of securities is worthy of careful study. ERNEST R. ABRAMS, New York city financial analyst and writer, specializing in public utilities, lived very close to this subject some years ago before the crash of '29 when customer ownership of public utility securities was very much in the picture. It was supposed to provide some sort of insulation between the operating company and the slings and arrows of political fortunes, with their impact on regulation. MR. ABRAMS' experience evidently moves him to take a less than optimistic view of the future possibilities for a customer ownership movement.

R. C. BUELL

WE, of course, do not take sides on such controversial questions—editorially speaking—but it does seem that there are certain differences in the situation that prevails today as compared with the Twenties which might make any definite parallel defective. For one thing, the far-flung holding company organizations of yesteryear have gone pretty much the way of § 11. It is the operating company rather than the holding company which today would do most of the local security distribution.

ANOTHER thing, such local interest and investment in operating companies were supposed to be promoted by the Holding Company Act. What's more, the regulatory protection prevailing today is supposed to be much more effective from the security buyer's standpoint. But what this all boils down to is a question of whether a man who buys a share of stock in a utility company is going to take a longer view of the economic problems of the utility company as reflected in the rate he pays as a customer—just because he has come to take a natural interest in the company's dividend record. It is a big question and one which may go far to answer the industry's need for a multitude of new security buyers to finance new plant expansion.

THE next number of this magazine will be out August 12th.

The Editors

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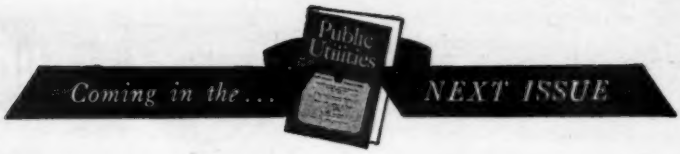

THE MODERN ELECTRIC GRID SYSTEM

Without the pooling of the nation's electric power reserves during World War II it is very doubtful if America's war effort would have been nearly so successful. Yet the basic pattern of interconnected grid system had already been established by business-managed power companies some years previous. Henry B. Bryan, president of the Philadelphia Electric Company, tells briefly the story of how his company and neighboring organizations linked up their modern grid system which today furnishes a reservoir of power in the strategic Susquehanna and Chesapeake bay area.

HOW MISSOURI'S NEW UTILITY ANTISTRIKE LAW WORKS

During the legislative biennium of 1947 a dozen states enacted special laws preventing a strike in a public utility industry or even a threat of a strike. One of the most comprehensive and forthright of these labor reforms for public service companies was Missouri's compulsory arbitration statute which sets up a special board to regulate labor relations involving public utility employees. Vance Julian, chairman of this new board, tells us how the new law works and what it is supposed to accomplish.

TOOLS AND POWER AND PROGRESS

When Cleopatra's galleys plied the Mediterranean in the days of Julius Caesar a whole shipload of galley slaves, working in shifts around the clock, developed in terms of power only as much energy as a small fan or other modern appliance consumes in a few minutes of operation. J. E. Bullard, writer of business articles, has undertaken an historical analysis of the background and growth of power development in terms of human usage to date.

UTILITY BILLS IN STATE LEGISLATURES DURING 1948

This was an "off year" in the various state legislatures—meaning that only a half-dozen out of the 48 states met in regular session. Nevertheless, combination of these few regular sessions with several special sessions turned up a number of interesting proposals of interest to utilities. Bethune Jones, legislative analyst, has gone over these various proposals, including those finally enacted, in a round-up article of the state legislative picture for 1948 as it affects the utility industries.

Also . . . ***Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.***

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Remarkable Remarks

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HINES H. BAKER
Executive vice president, Humble Oil & Refining Company.

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FELIX MORLEY
Writer.

"A third world war would likely efface God from the minds of men. That was Lenin's primary objective."

EDWIN G. NOURSE
Chairman, Council of Economic Advisers.

"The economic rationale of European aid is that it is an investment in future purchasing power for our people."

JOSEPH H. BALL
U. S. Senator from Minnesota.

"If we permit industry-wide bargaining on an unrestricted basis, then industry-wide strikes are inevitable."

EVANS WOOLEY
Vice president, American Bankers Association.

"Government lending, in its ultimate aspect, is a one-way road to business monopoly, as well as to the completely socialized state."

EDITORIAL STATEMENT
The Journal of Commerce.

"The ban on the closed shop will remove one of the most effective obstacles to industrial efficiency that has been devised by the monopoly school of labor leaders."

JOSEPH H. BELLEW
Counsel, Southern States Industrial Council.

"It is ironic that, while we are so concerned about the spread of Communism in Europe, we give so little attention to the spread of Communistic ideas and philosophies here in our own country."

EDITORIAL STATEMENT
The Wall Street Journal.

"It would be sheer folly if our government, while taking on an exterior burden which cannot be measured in advance, should at the same time attempt to carry on a variety of public works and 'social gains.' "

EDWARD MARTIN
U. S. Senator from Pennsylvania.

"We are riding for a terrible fall, with an unpleasant landing, if millions of Americans continue to insist that the Federal government should step in and run more and more functions of our life—by regulation and by financing."

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CONFERENCES

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Utility Round Table

Utility operating companies that once could turn to their parent holding company for construction capital and other financial needs have found the counsel offered at the Irving Trust Company Investor Round Table Conferences a boon to a better understanding of their newly acquired responsibility. Today the bank will complete its eighth such conference, the final meeting of the current series that began last October. Since that time nearly 100 senior officers, including three board chairmen, eighteen presidents, twenty-six vice presidents and fifteen treasurers, representing forty-five utilities operating in nineteen states, have attended the meetings. In all-day meetings, participants in discussions have included investment bankers, top-ranking security analysts, insurance company officers representing the institutional buyer's viewpoint, executive officers of the New York Stock Exchange, and several financial editors from New York daily newspapers.

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MARCUS NADLER
Professor of finance, New York University.

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EARL O. SHREVE
President, Chamber of Commerce of the United States.

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CHARLES E. OAKES
President, Pennsylvania Power & Light Company.

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LEWIS F. GORDON
Vice president, Citizens & Southern National Bank (Atlanta).

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EDITORIAL STATEMENT
Engineering News-Record.

"The question of how much investment is warranted for protection against floods to be expected once in fifty years, and where advance warning can always be had, is a debatable matter."

JOSEPH M. DODGE
President, American Bankers Association.

"Those who intend to progress must be sure to develop themselves as individuals and personalities as they add to their knowledge and experience. There comes a time when technical knowledge and ability are not enough."

BURR P. CLEVELAND
President, First National Bank of Courtland (New York).

"Commercial banking has a dual obligation under present conditions—to preserve its own strength and to protect its customers, American business and industry. Only by demonstrating its ability to meet these tests can banking resist the all-too-common arguments in favor of nationalization."

EDITORIAL STATEMENT
The New York Times.

"The resources were at hand, but it took pioneers to develop them, and Edison was a pioneer, as truly as were Daniel Boone, Davy Crockett, and the adventurers who conquered the West with covered wagons, plows, axes, and rifles. But it also needed energy to develop the resources, and it was he who developed the energy—electric energy."

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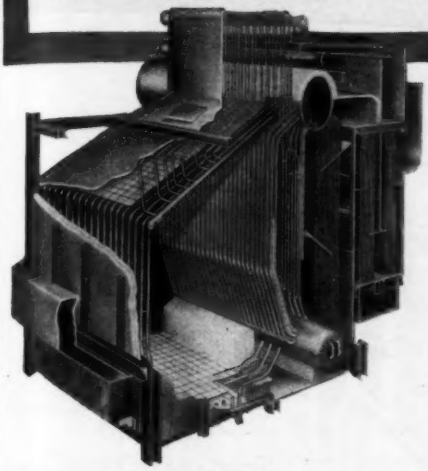

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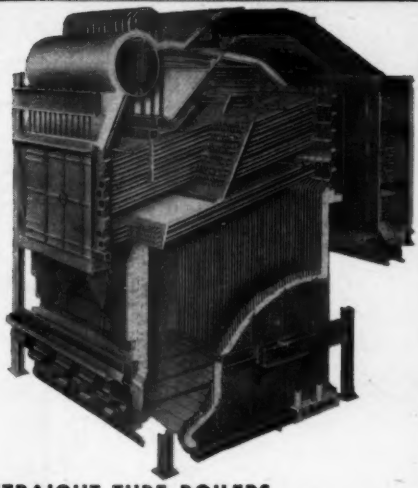

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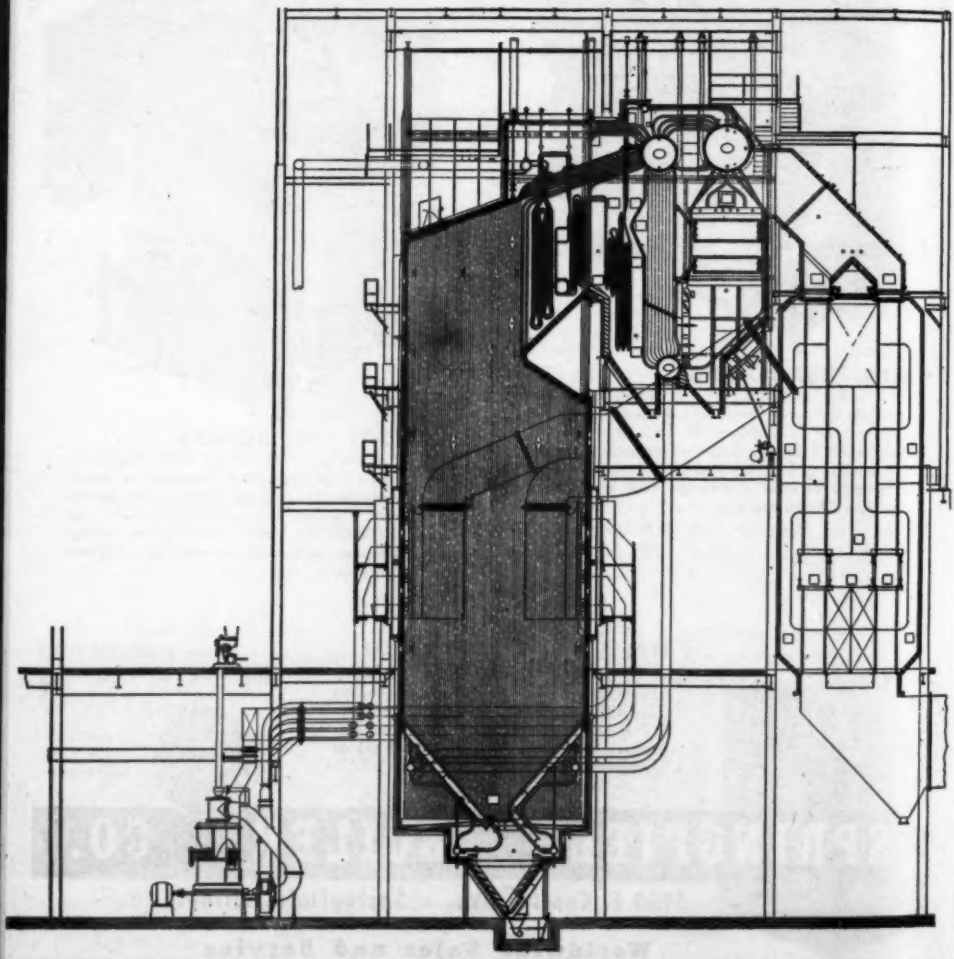

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1	975	975	2619	975	343928
2	489	978	3108	1953	687268
3	449	1347	3557	2900	1030121
4	429	1716	3986	4616	1372528
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8	454	3632	5302	15841	2737937
9	418	3762	5720	19603	3078199
10	458	4580	6178	24183	3418043
11	391	4301	6569	28484	3757429
12	437	5244	7006	33728	4096424
13	469	6097	7475	39825	4434982
14	467	6538	7942	46363	4773071
15	491	7365	8433	53728	5110693
16	537	8592	8970	62320	5447824
17	542	9214	9512	71534	5784418
18	549	9882	10061	81416	6120470
19	541	10279	10602	91695	6455973
20	605	12100	11207	103795	6790935
21	595	12495	11802	116290	7125292
22	607	13354	12409	129644	7459054
23	602	13846	13011	143490	7792209
24	654	15696	13665	159186	8124762
25	600	15000	14265	174186	8456661
26	658	17108	14923	191294	8787960
27	653	17631	15576	208925	9118601
28	734	20552	16310	229477	9448589
29	692	20068	17002	249545	9777843
30	726	21780	17728	271325	10106405

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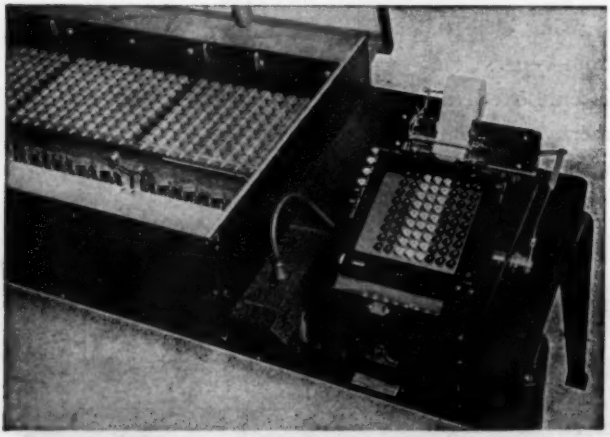

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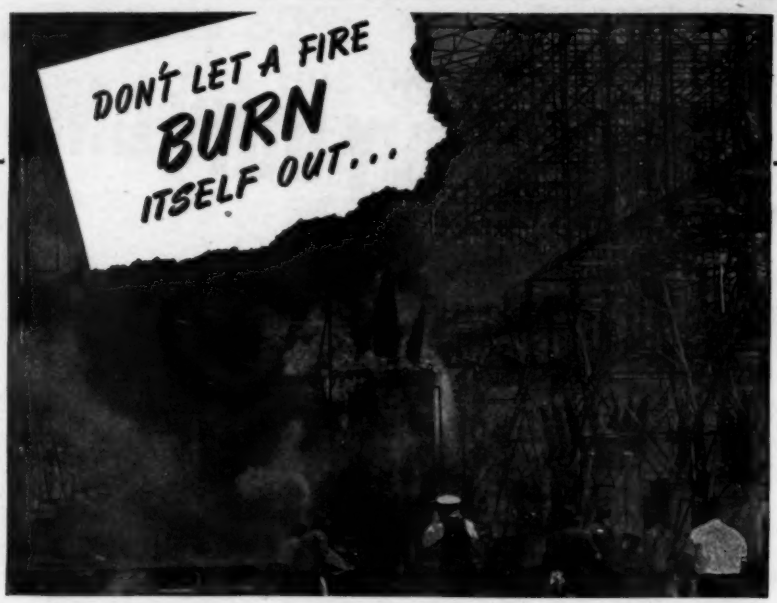

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Utilities Almanack

July

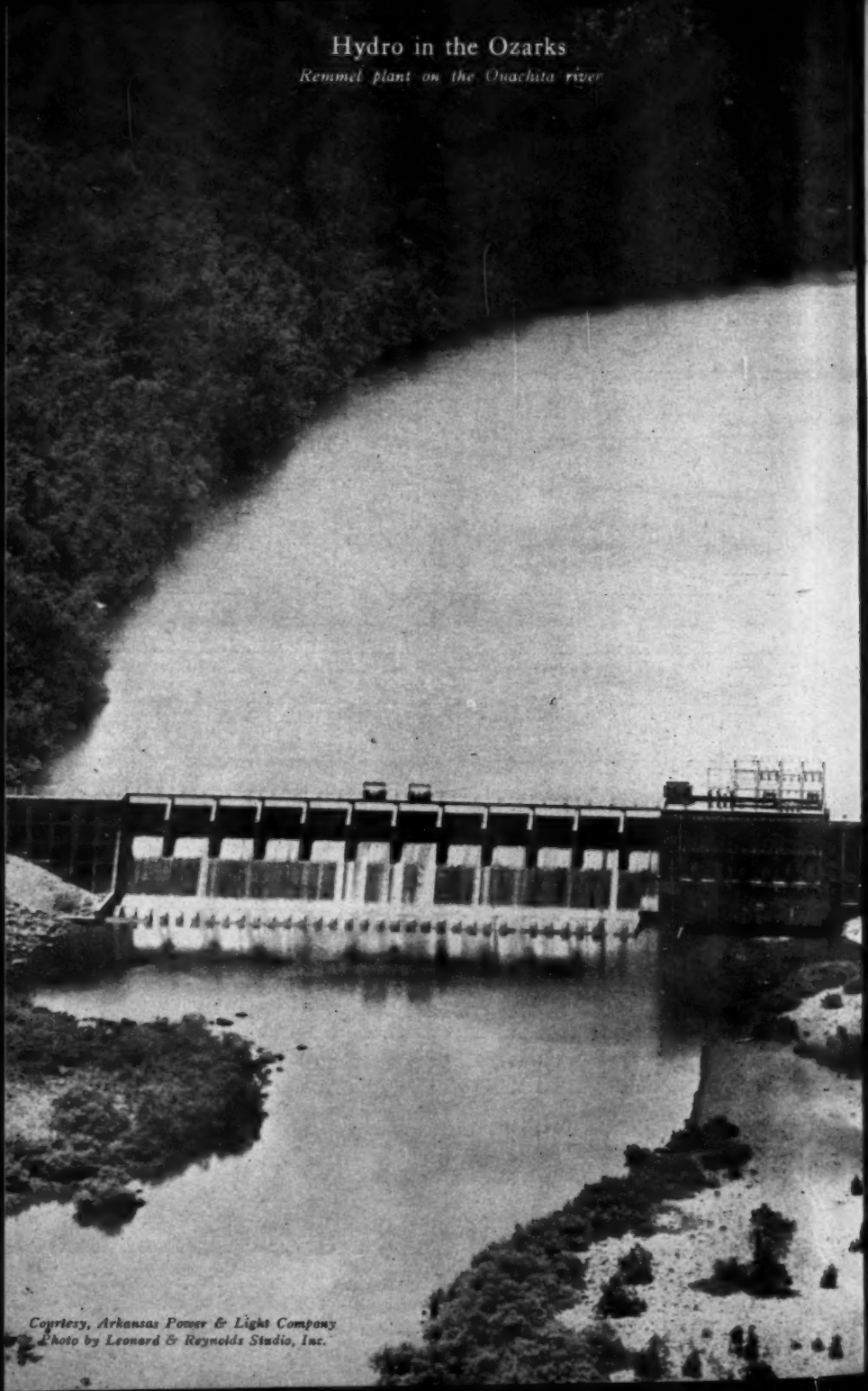
29	Th	¶ *Oregon Traffic Engineering Conference begins, Corvallis, Ore., 1948.*
30	F	¶ *Missouri Broadcasters Association will hold first annual meeting, Kansas City, Mo., Aug. 16, 17, 1948.*
31	Sa	¶ *American Water Works Association, Kentucky-Tennessee Section, will hold annual meeting, Chattanooga, Tenn., Aug. 23–25, 1948.*

August

1	S	¶ *American Institute of Electrical Engineers will hold Pacific general meeting, Spokane, Wash., Aug. 24–27, 1948.*
2	M	¶ *National Council of State Boards of Engineering Examiners will hold annual meeting, Salt Lake City, Utah, Aug. 27, 28, 1948.*
3	Tu	¶ *American Water Works Association, Minnesota Section, will hold annual meeting, Winnipeg, Manitoba, Canada, Sept. 1, 2, 1948.*
4	W	¶ *American Bar Association will hold annual convention, Seattle, Wash., Sept. 6–9, 1948.*
5	Th	¶ *New Jersey Gas Association will hold one-day meeting, Spring Lake, N. J., Sept. 10, 1948.*
6	F	¶ *Instrument Society of America will hold instrument conference and exhibit, Philadelphia, Pa., Sept. 13–17, 1948.*
7	Sa	¶ *Pacific Coast Gas Association will hold 55th annual convention, Santa Cruz, Cal., Sept. 14–16, 1948.*
8	S	¶ *American Water Works Association, New York Section, will hold annual convention, New York, N. Y., Sept. 14–17, 1948.*
9	M	¶ *Michigan Independent Telephone Association will hold annual convention, Lansing, Mich., Sept. 23, 24, 1948.*
10	Tu	¶ *American Transit Association will hold annual convention, Atlantic City, N. J., Sept. 26–30, 1948.*
11	W	¶ *Association of American Railroads, Communications Section, will hold convention, Colorado Springs, Colo., Sept. 28–30, 1948.*

Hydro in the Ozarks

Remmel plant on the Ouachita river



Courtesy, Arkansas Power & Light Company
Photo by Leonard & Reynolds Studio, Inc.

Public Utilities
FORTNIGHTLY

VOL. XLII, No. 3 JULY 29, 1948

Relationship of the Power Industry to National Defense

What would happen to the electric power industry if a third world war should come to the United States? Although expressing only his personal opinion, the following is a gripping account by an authoritative expert of what the industry might expect would develop before and after such activities commenced, and would be required of the industry in order to perform its function in its traditional patriotic and satisfactory manner.

BY J. W. SWAREN*

STRATEGY may be defined as the application of national resources to the attainment of national policy. Resources used indiscriminately might well be a detriment to our defense. Resources must be marshaled, and coördinated; fitted into definite time schedules, and budgeted to achieve optimum results. This marshaling of resources is a major function of logistics. Electric power is a basic resource, and, although often overlooked, is one of the fundamentals in building logistic plans.

Logistics may be considered as a chain of four links. Three of these are primarily military functions: The determination of over-all *requirements*, the *procurement* of component units which make up such requirements, and the placing of the required matérial and personnel (once procured) into the actual firing line, or *theater of supply* —in proper amounts on scheduled time.

*Technical analyst, Industrial College of the Armed Forces. For additional personal note, see "Pages with the Editors."

The fourth link of this logistic chain, third in sequence of flow, is *mobilization*—the orderly assemblage of man power, and its training into effective military personnel—the careful budgeting and assembling of resources, and its transformation into end items that produce or support the fire power essential to breaking the will of the enemy. I mention this link last because it is the one in which the power industry has a vital rôle. It is this phase of mobilization, this assemblage of matérial resources, which we term "industrial mobilization."

As a link of the logistic chain, industrial mobilization is basically civilian, for in these eras of total war only civilian personnel and facilities are available for the vast entourage necessary to wrest primary materials from raw resources, and fashion these into weapons of offense and defense, and support. They who are trained as soldiers are too few, and individually represent such an important segment of our strength that they should not be diverted from their major mission —destruction of the enemy will.

BEAR in mind, however, that chronologically the first link in the logistic chain is *requirements*, and the last link is *supply*. Now linking of chains implies linking of thoughts as well. Yet how can the military and industry link thoughts unless both have certain common standards—as understandable medium—of communication? Hence the importance of industry knowing the relationship it bears toward national defense. Let us review certain developments whereby electric power has become of vital importance in military planning and military execution.

First, it may be well to review the lessons history teaches, and how these lessons were applied in mobilization for the Second World War, how these plants withstood the shock of war, and, finally, present trends which it is hoped will result.

Prior to the industrial revolution, armies were small. The size was limited by the difficulty of supplying even the small amount of armament required for mercenary troops of those war days. With increased capacity for arms production, more troops became possible in an increasing spiral. Thus, today, we have reached the era of total war involving the whole populations of the combatant nations, either as soldiers or productive units.

It is interesting to observe that any major industrial improvement usually has been tested in a small war before it is accepted as a strategical or tactical element. Perhaps the most pertinent example is the railroad. In its early days, it was looked upon as unsuited for supply functions. But in that series of small operations in northern Italy in 1859 its worth was proved—and in the war between the states of the early Sixties, rail became the framework of military strategy.

ELECTRIC power as a function of war furnishes a somewhat parallel case except that its mobilization value —and dangers—were proved in a major war. Electric power equipment was first a tactical target on the night of December 16, 1914, when a German cruiser force made a sortie along the northeast coast of England, and the brilliantly lighted station at East Hartlepool was "knocked about a bit," to use the exact words of one of

the switchboard attendants. Black-out measures became standard practice thereafter. Not a great deal of damage was done to the station, but a material effect was felt in one industrial area due to feeder equipment damage. The bombing in subsequent air raids did comparatively little damage to electric power, but did point out the danger inherent in the multiplicity of frequencies, current characteristics, and line voltages prevalent in Great Britain.

Economic reasons, also, indicated need for a revision of these systems. Great Britain, from its Electricity Act of 1882, had leaned strongly toward self-supporting forms of government ownership, although there has never been the bitter conflicts between private enterprise, and the various types of "undertakings," as English government utilities are termed, that has developed in some other parts of the world. Then came extensive study by several commissions, the chief of which was the McGowan Committee. From that the English grid system was evolved. Its engineering was based largely on studies of American power systems but its organization and financing are essentially British.

From an engineering point of view, the grid has a good operating record. From September 3, 1939, to May 8, 1945—there were 4,607 interruptions, in a system consisting of 5,000 miles of line, installed generating capacity of 11,000,000 kilowatts, in 142 stations, substation capacity of 13,900,000 kilovolt amperes in 348 stations. Of these interruptions 51.7 per cent were of direct war causation. Parenthetically electric power facilities were never specific targets, but merely were within the dispersion limits of other targets.

THE Battersea station in the London dock area was an aiming point due to its prominence as the impact pattern clearly shows, but, in view of the infrequent hits scored, seems to not have been the primary target. A similar situation occurred in Singapore, where the Japanese aviators had specific instructions not to bomb the power station, as its continued operation was deemed essential after capture of the city.

Eight per cent of the total interruptions were the result of enemy action and 43.7 per cent by defense measures. Chief source of defense interruptions was dragging of gear by barrage balloons. This accounted for 35 per cent of all interruptions. Interruptions not attributable to war totaled 2,225, or 48.3 per cent of the total.

In Germany a somewhat different pattern was followed. The Weimar

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Republic was committed to nationalization, but beyond employment of a consulting engineer, Dr. Miller, did nothing to implement this commitment. Dr. Miller prepared a rather comprehensive plan calling for a number of nexus in the important industrial areas as a beginning. By nationalization the nexus were to be extended to overlapping in certain regions. A second step was interconnection by 220 kilovolts with comparative light construction in a gigantic peripheral ring encompassing all Germany west of the Oder with radial ties to important generating complexes in the coal fields.

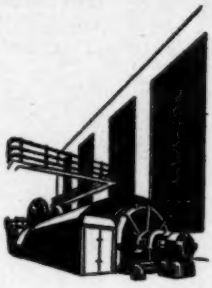
When the Nazi régime came to power and rearmament became a reality instead of a dream, the military perceived the importance of electric power, and the Nazi High Command not only retained Dr. Miller, but urged that he increase the coverage. It is interesting to observe that an industry coördinating committee, not too unlike our American EEI, served as coördinating agent. This committee was remotely integrated into government control, but it was not until late in 1942 that the Speer ministry completely integrated the power industry into the war effort.

WHEN the German Army crossed into Austria, heavy construction machinery marched with the advance guard and in a few hours was at work on the Danube.

By the height of the war, the physical plan was a gigantic horseshoe of 220 kilovolts running from Switzerland and western Austria north to Cologne thence across to Berlin thence southeasterly to western Czechoslovakia and eastern Austria. Ring circuits surrounded Berlin and were fed by large mine mouth plants situated on the brown coal deposits. From Brauweiler substation, near Cologne, the 220-kilovolt line designed for 387-kilovolt operation ran south to Herbertingen near the Swiss border, where it bifurcated, one leg going to Bludenz in Austria to pick up Austrian hydro power, the other turning westward roughly paralleling the Rhine to pick up Swiss and German hydro along that river.

Although German power was never a coördinated target for aerial attack, it was subjected to tremendous losses from intense area bombing and impact dispersion. It might be of interest to cite two specific instances. The Goering Steelworks at Hallendorf had a steam station capable of developing 300 megawatts. The steelworks were completely destroyed, leaving the power plant intact and idle during the closing days of the war when energy was badly needed elsewhere. Conversely the Krupp works at Essen despite light damage were shut down for several weeks prior to capture by the Americans, because the powerhouse and interconnecting substation had been completely wrecked. So, here an essential arms production capacity was idle in a critical period of the war.

IN Japan a third method of approach to war was followed. This might be termed the infiltration method, infiltration on both the financial and the operating levels. Close regulatory control of the power industry is, and for many years has been, vested in the Electric Power Bureau of the Ministry of Commerce and Industry. In 1938 Japan made sweeping changes looking



First Attack on Power Equipment

"ELECTRIC power equipment was first a tactical target on the night of December 16, 1914, when a German cruiser force made a sortie along the northeast coast of England, and the brilliantly lighted station at East Hartlepool was 'knocked about a bit,' to use the exact words of one of the switchboard attendants."

toward a war economy. More than 500 companies engaged in the power industry were merged into 9 supply and distribution companies known as the Haidens. Sometime afterward all large generating stations and all high-tension lines were merged into the Japan Electric Generating and Transmission Company, commonly called the Hassoden.

The Hassoden served another purpose of much importance, as war inflation spread and the purchasing power of the yen fell. It continued to sell energy at prewar rates to the Haidens, which in turn had some relief, but not sufficient in rates. The Hassoden in turn received loans and direct subsidies from the Imperial Treasury, as well as banks. The Haidens received enormous loans from government-dominated banks. But these were not enough, and the power industry was virtually bankrupt at the close of the war. One of the first jobs tackled by the mission with which I was connected was a review of the rate structure by Mr. Miller of the Wisconsin Public Service Corporation. *Net result of this was a 300 per cent increase in rates which should have merely permitted a breaking even.* Further drastic increases are indicated.

As to effect of enemy action on Japanese power, this was not greatly different from German experience, except that fire damage exceeded explosives damage, and the special damages incurred at the atom bombing of Hiroshima and Nagasaki.

Now let us take a brief look at the interim trends in the United States. It was not until 1938 that even the Armed Services gave more than casual thought to power as a factor in national defense. In the meantime there had been nasty financial scandals in the

industry, hydro developments by private capital had virtually ceased due to economic and regulatory factors, fierce conflict had developed over types of ownership—in fact most everything had happened that could frustrate the coördinated effort that is implied in national defense.

In 1938 the National Defense Power Committee began studies which eventuated in recommendations that were unrealistic from an economic point of view. By their magnitude of conception they would have been shackling to the mobilization effort had an endeavor to carry them to completion been undertaken.

At this point I want to interject an observation on the actual war conduct of the civilian agencies. Virtually all utility people, today, are familiar with the excellent job done by the Office of War Utilities of the now defunct WPB. But in my opinion the biggest, most effective action it took was *stopping construction of over 6,000,000 kolawatts of generating capacity in the face of predictions of dire consequences from shortage of power*. When I visualize the big guns represented by the shafts of these machines, the destroyer escort power plants that replaced these boilers and turbines, the shell cases that were drawn from brass that might have been generator winding and bus bar and transformer coil copper, to my mind this action was one of the decisive actions of the war.

But the old National Defense Planning Committee did have one result that well repaid its existence. It made every section of the industry—publicly owned, privately owned, and captive—aware of the importance of power. True, some of the interested units utilized defense necessities as an argument for improving their own relative positions. But the idea of power as a national factor was the cornerstone which eventually developed into coöperation of power pools that made it possible to say that "power was never too little or too late."

Yet, such splendid coöperation must be considered, today, along with a word of warning for the future. We could not expect to repeat this performance, in the same way, without more reserves. *Should another emergency arise, today, no reserve capacity would be made available for base load through interconnections.* Most of the important interconnections are in use, and the industry has learned to operate on a smaller reserve!

It might be well to inquire into what the power industry may expect in another emergency. A trite saying of the man in the street is that "The generals are always prepared to fight the previous war." But rarely does this man in the street reflect on the consequences of failure should untried weapons or methods prove inadequate.

Reflect for a moment on the care a business management provides in trying a new device, or introduction of a new procedure. Think how much more depends on correct decision by high command, and be thankful that the generals are always prepared to fight the previous war—at least until the new can be tested. So, those responsible for national defense study history in its minutest details, and endeavor to visualize the effects that scientific advance may impose—then start the fighting not far from where it

left off. So I hope that should another emergency arise, there will be an immediate agency authorized to control scarce and essential commodities; that there will be committees comprised of leading thinkers from industry with plans ready for another OWU to spring almost full panoplied into being; that operating pools of even greater extent of geography and capacity than ever before will be coördinated into smooth functioning with a minimum of delay.

These will not occur spontaneously. Previous planning is necessary. And much of this planning for the power industry must be done by the industry itself. Until specific plans are issued by the war agencies, any industry can expect to do again those things it did in the last war—except in larger volume. The power industry can expect direct war loads at least 25 per cent greater than in the last war. Individual companies would do well to plan capacity, or civilian curtailment to provide that much output for direct war loads. And it would be well to bear in mind that converted plants usually result in increased load. Further, this load—these curtailments—must be achieved under wartime vicissitudes.

LIKEWISE every utility might give thought relative to suitable locations for new industries—or dispersions of industry. Also the probable interchanges with adjoining systems might well be computed. Every construction of facilities for interchange is just that much of a move toward industrial preparedness. However these problems of interchange are ever with you, and I shall say nothing further. This planning should be sparked by the National Military Establishment.

The power industry, as it relates to national defense, will be called on to supply energy for six basic groups:

1. Direct military use; camps, posts, etc.
2. Military facilities—the arsenals, Navy yards, etc.
3. Direct contractors to the National Military Establishment.
4. Subcontractors to the National Military Establishment.
5. Civilian component for supply and service to civilians of the above four classes. Because of important shifts in population brought about by the staffing of direct and indirect defense establishments this component frequently is of major importance.
6. All other civilian requirements.

Legislative action has established two boards which will have many contacts with the power industry. One, the National Security Resources Board, is primarily a policy board for advising the President. In time of war, the overall economic agency, the WPB, will stem from this board. Its powers are wide, and it in turn calls on industry

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¶ "WHEN *the German Army crossed into Austria, heavy construction machinery marched with the advance guard and in a few hours was at work on the Danube. By the height of the war, the physical plan was a gigantic horseshoe of 220 kilovolts running from Switzerland and western Austria north to Cologne thence across to Berlin thence southeasterly to western Czechoslovakia and eastern Austria.*"

for many advisory committees. It will make extensive studies in order to coördinate military, industrial, and civilian mobilization. While its operations are primarily at the policy level, its planning will embrace many features that can be swiftly expanded into the operational field. Its power consultant is Edward Falck, well known to all utility men as former head of the OWU. The basis of its planning will be the experiences of OWU. Like the generals, it probably will proceed on tested procedures.

THE other board of which the power industry will hear much is the Munitions Board. An important part of its functions is planning the military aspects of industrial mobilization. And much attention is being given to power and its relation to mobilization. Not only does it function directly on power problems, but by committees reaches far into the planning stages.

There is one committee of particular importance. The service power advisory committee, its members, civilian and military from the planning echelons, equally from Army, Navy, and Air Forces. Not only will this committee keep the Munitions Board fully abreast of the thinking in all planning echelons, but will carry back to those echelons the relationship and situation of the power industry. Mr. Eldredge, also from OWU, heads the power and fuels branch of this board.

So I think it may be said that the power industry will be kept well abreast of variations in requirements, as planning of the Military Establishment follows the trend of world tensions.

There are other organs of the Military Establishment that will have contact with the power industry, but space precludes mention of more than one. The Industrial College has a reserve instruction branch. Briefly its mission is to give a condensed version, lasting two weeks, of the regular mobilization course, at selected industrial centers. It is hoped that more cities may be visited, and more men may have this contact.

So much for history or planning. Now as to operation—of the part that will be played by the power industry should some misguided nation care to challenge our way of life.

BUT in considering the rôle of the industry in war, first we must have some knowledge of the characteristics of the fighting.

First, if I were to hope it would be a long war, the reader's immediate reaction would be "Why?" It is certain that the initial impact will be unexpected—and heavy—and in spite of all our planning will not find us fully prepared, certainly not mobilized. Mobilization will speed into production the facilities of the Military Establishment, closely followed by conversion of our civilian economy to a war economy—always a painful process.

So heavy can this impact be, that every bit of determination, every ounce of our strength, may be required to avoid complete elimination within a few days. But whatever be the pattern of first impact, there will follow the dark days of gathering our forces, and hammering our opponent, until he in turn, by attrition, and by successive hammer blows with weapons of today, and with weapons that are as yet little more than a gleam in the eye of someone; until his will is broken—even more

Uselessness of a Defeated Nation

"OUR industrial productive facilities, our natural resources, our food potentialities are the envy of the world, the magnet which will attract aggression. If any lesson is read by our enemies from the lessons of Germany and Japan, it is the uselessness of a defeated population, with its means of self-support destroyed."

completely than were Germany and Japan in the last war. This will require time, and unless we as a nation have the resilience and stamina to come from behind, our national existence may well cease.

IT might be well to examine the probable pattern of impact which the industry will be called on to resist. Long-range aerial bombing of great intensity is certain. This may be done with nuclear fission, guided missiles, or intensive saturation bombing with super-high explosives. Whatever the missile, the destruction pattern will not vary greatly. At the center of impact or ground zero an area from 200 to 1,000 yards in diameter will be totally destroyed. Restoration of service in this area will take more effort than entirely new construction, as the débris will require removal. Only in exceptional instances will restoration be worth while. Surrounding this central area will be a belt having a width somewhat less than the diameter of the area of total destruction. Service, particularly overhead service, can be restored with an effort approximating entirely new construction. Surrounding this will be a second belt, where lines, cables, and transformers will be subjected to destructive forces about equaling heavy sleet storms or hurricane winds. Beyond this the destructive effort will gradually fade away. And in the case of nuclear bombs sporadic destruction may be evident at distances as much as 5 miles from the center of impact.

THE next question might be "Where will be the center of impact?" What is a target of sufficient importance to justify an attack of this intensity? Let us examine for a moment the train of thoughts that will motivate the enemy high command. Regardless of how we may view our

country, to the rest of the world it is an inexhaustible Eldorado. It matters not what is the incident which provokes conflict, our adversary in his victory will visualize control of the resources —industrial, natural, food production —and within controllable limits will endeavor to conserve these. The power industry of Great Britain as compared with the power industry of Russia is well illustrative. The German High Command visualized postwar Russia as a reservoir of food, and its power resources were destroyed ruthlessly. Great Britain, however, was visualized as an industrial base, and the power industry was never considered a basic target, until after Germany no longer had an air force capable of systematic destruction.

Our resources will be the ultimate goal—not our people. Our industrial productive facilities, our natural resources, our food potentialities are the envy of the world, the magnet which will attract aggression. If any lesson is read by our enemies from the lessons of Germany and Japan, it is the uselessness of a defeated population, with its means of self-support destroyed. Or the entire lack of value of a former industrial nation with its facilities destroyed. Anyone familiar with the dream of turning facilities of liberated Europe into a productive base for war against Japan, and the sad result achieved, will recall the meager results obtained.

To my mind, if there is any lesson we should draw it is that, within his power to prevent it, our adversary will endeavor to hold physical destruction of our economy to a minimum. So as a matter of preservation to his own use, our adversary may direct his forces at destruction of the populace. Weapons of the most lethal mass effects may be in the forefront of his assaults. Personnel, civilian personnel, may be his primary targets, rather than industrial might which has always been the allied target in past wars. But do not let this thought lull industry into complacency. The weapons will be so powerful, their range so great, that normal dispersion factors, which cannot be avoided so long as gravity remains in effect, will make probable a more widespread destruction of power equipment than has ever been experienced in Germany or Japan.

Some plants may be primary targets, if serving an important direct war activity, or a population center of sufficient magnitude. In short any important power plant may justify use of a super bomb. Reducing this to a practical basis, my own personal opinion is that any generating station in excess of 150,000-kilowatt capacity might be classed as a prime target.

The industry may thus be called on to make restorations of service over wide areas. It may expect to have important stations eliminated. It may expect to render emergency services to large groups of dispossessed people. The integrated grid system proved its worth in England.

Economic integration proved its worth in the United States. But a proposed prewar far-flung grid was not justified by economic computation. Perhaps with the data being developed at the Brilliant experiments, such a grid might justify itself. But for any loads that appear in the interchange zone at present, if Kelvin's law is applied

vigorously, the balancing interest on cost would be so small that adequate structural strength would be impossible. Either loads must be much greater, or the economics of Kelvin's law will not apply. If larger loads are concentrated, we begin to enter the area of prime targets. How to balance these factors merits the study of every engineer engaged in transmission.

Let us next examine the relationship of industrial loads to mobilization conversion.

These may be divided into three categories:

1. Industries that continue much as in peacetime, but with increased output. Generating stations, flour mills, mines, are excellent examples.

2. Industries that modify their product, but continue with the same or similar equipment, and identical techniques. Textile mills that produce uniform cloth merely by adjusting thread counts, or shoe factories that merely change the lasting are pertinent examples. Such changes invariably mean increased demand for both kilowatts and kilowatt hours, so merit study by industry planning groups.

3. Industries that completely revamp techniques; tear out all equipment, reinstall it in conjunction with entirely changed types, and develop new techniques. Auto factories converting to machine guns, linoleum factories converting to shell making—in fact almost the whole gamut of change will be played. Mere study will not keep abreast of these. It requires intimate contact—close coöperation between procurement officers of the Military Establishment, the affected industry, and the power industry.

ONE last point. That the United States will be the first to feel any future major war is perhaps true. That it will be in the forefront is unquestionably probable. But with the frequently expressed statement that it will be sudden, and unexpected, a complete surprise, I am not in accord. Wars do not grow that way. The cost in matérial and deterioration of morale in a fully mobilized nation is more than any war machine can carry, unless war is being actively prosecuted. Invasion of Poland was not an overnight whim —nor the attack on Russia. Nor our own Pearl Harbor. Nor was any one of these the action of a fully mobilized nation. In cold fact, Germany was not fully mobilized for several years after Poland had ceased to exist. And Japan, despite its war footing for conduct of the China incident, was far from a mobilized nation.

Rather, war approaches by a series of incidents, wherein the aggressor strives to place himself in a more advantageous position by one movement, while lulling his adversary to complacency by retreat in another. It is a series of Munichs and Agadirs. Sometimes tensions are relieved by a sudden flame in an unexpected area, such as Pearl Harbor, where even the most sanguine Japanese leadership found itself unprepared for exploitation. But more often it is relieved by a series of events like Anschluss in Austria, the reclamation of the Sudetenland, and a final larger flame blown into a conflagration as did Poland. So it seems to me war will again come to us in this world of tension.

SOME error on the part of a subordinate, some explosive experiment that gets out of hand may be the spark that will kindle the flame. Where? Sore points encircle the globe. Korea. The Philippines. The Burma frontier. Greece. The Dardanelles. Italo-Yugo-

slav boundaries. Berlin. Norway. Even Iceland. One guess is as good as another. But I doubt a sudden onrush of a fully mobilized enemy. Rather, I fear our own weakening complacency, until a tension that strength would control, will break the bounds and conflagration will be loose. Industries in categories 1 and 2 above might well form an industrial forefront to receive the first shock which complacency breeds. Other industries, perforce, must await direction to the lines which it is the duty of the National Military Establishment to prepare.

The Military Establishment is beginning to implement its plans for mobilization. It can build new plants, it can effect complete conversion of industry, yet these will stand, an inert mass, without the vivifying energy of electric power. And to come back to my title, what is the relationship of power to national defense? My answer is, it is that mysterious spark which is its life.

Electric Shock for Mental Patients

Dr. C. S. Holbrook of Tulane University recently told a meeting of the Southern Medical Association at Baltimore about electric shock treatment for milder psychiatric patients. This new treatment is intended for so-called "out patients" suffering early mental or emotional disturbances and who do not want to lose time from their work for regular hospitalization. Dr. Holbrook says the electric shock treatment is comparable in intensity to that given hospitalized persons and is accomplished by sending a charge of electricity through the brain of the patient.

Among hospitalized patients suffering from "all forms of depression," and "many patients suffering from excitement," Holbrook told a reporter, the advent of electric shock treatment has cut hospitalization time from about 126 days to a "little over a month."

But he declared there still "are many disadvantages to the present electro-shock treatment," including potential spinal injuries and other bone complications resulting from convulsions induced. He said the treatment could produce marked confusion and profound memory disturbance.

Dr. R. Finley Gayle of the Medical College of Virginia, describing the newer "brief stimulus" electric treatment, said the one great advantage it has over the older electro-shock method is that with it "amnesia and confusion of memory (resulting from treatment) are absolutely nil."

Customer Ownership Of Public Utility Securities

The author poses the question whether the companies should not sell only their soundest securities—their bonds and debentures—to their customers in order to avoid the risk of damaging customer and public relations.

By ERNEST R. ABRAMS*

ONE phase of the financial history of public utilities will be repeated if a suggestion made before the recent EEI annual convention gains wide acceptance. The suggestion was that the industry should encourage widespread ownership of equities in its local service areas, and that the industry should well consider sale of its equities to its customers on an instalment basis, thereby further increasing local ownership. Before engaging in this activity, utility managements might also consider some of the complications likely to be encountered.

The sale of public utility stocks by issuing utilities to residents of their service areas began about forty years ago, shortly after establishment of the first public utility commissions in New York and Wisconsin, and reached its peak about ten years later. The purpose of the sale of equity securities by issuing utilities to their own customers was twofold. First, it was an attempt to raise capital through the sale of a class of securities which was often difficult to distribute through established investment banking channels. Second, it was believed that customer ownership of securities of the utilities serving them would create customer interest in their financial success and build a sort of Maginot Line against rate reductions and municipal ownership agitation. However, only in a few instances were either of these objectives attained.

In 1917 Northern States Power was selling sufficient preferred stock each month to finance normal construction requirements — not generating plants but line extensions. During the same year Oklahoma Gas & Electric was meeting stiff resistance in the sale of preferred stock to its customers and the volume of capital raised in this

*For personal note, see "Pages with the Editors."

manner was negligible. But in neither case did the ownership of preferred shares by customers prevent rate reductions or the transfer of some portions of the service area from private to public ownership. Moreover, ownership of their preferred stocks by their own customers created new public relations problems for many utilities.

The lack of marketability in those days of unlisted utility preferred shares boomeranged during the depressions of 1921 and the 1930's to create utility customer ill will instead of the good will that was supposed to result. With no quoted market or supporting bids available, customers forced by circumstances to sell their holdings were at the mercy of "sharpshooters" and many of them were frequently forced to sell their shares for half what they paid the utilities for them. While the issuing companies were not to blame for this condition, they "got it in the neck" anyway.

MOST customer ownership campaigns were abandoned in the middle and late 1920's because anything that was called a stock, whether preferred or common, found a ready market through investment banking channels. In fact, unless bonds and debentures carried the privilege of converting into equities, all but institutional investors ignored them. Nevertheless, enough preferred shares had been sold by utilities to their customers by the fall of 1929 to add fuel to the fire that eventually flared into the Holding Company Act of 1935.

Even under the best of conditions, the cost to utilities of selling their own preferred shares to their customers was high by present standards. Depending upon experience and sales records, salesmen were paid from $100 to $200 a month, plus a commission of $1 per share, and although over-all costs varied with the prosperity of the service area and the amount of stock sold, the average cost to the utility of selling a share of preferred stock to a customer ran somewhat above $5. Moreover, while a few utilities serving prosperous areas like Washington, D. C., Indianapolis, and San Diego got away with lower dividend shares, the great majority of the preferred stocks offered by utilities to their customers paid dividends of from 6 per cent to 7 per cent annually. Even so, customer response was meager in most areas.

NO statistics are available as to the number of utility-sold preferred shares bought by their customers thirty years ago, but the results of a 1945 study of the average holdings of preferred shares per stockholder of 18 utility issues created primarily for local sale to customers by the issuing utilities and not listed on any exchange are outlined on page 149.

Although the 5 preferred issues listed on page 149 are those of utilities serving larger communities or areas than those represented by the 18 preferred stocks in the foregoing tabulation, which undoubtedly had an influence on the size of the average holdings, perhaps more significance should be attached to their being listed upon either the New York Stock or Curb exchanges and the broad market which the resultant trading privileges provided.

COMPARED with an average dividend rate of around 6½ per cent carried by the preferred stocks sold by public

Company	*Average Holding*
Arizona Edison	29 shares
Blackstone Valley Gas & Electric	24 "
Empire District Electric	20 "
Idaho Power	35 "
Indianapolis Power & Light	30 "
Kansas Power & Light	29 "
Luzerne County Gas & Electric	12 "
Michigan Public Service	7 "
Missouri Power & Light	16 "
Montana Dakota Power	24 "
Otter Tail Power	25 "
Pennsylvania Water & Power	10 "
Potomac Electric Power—6%	9 "
Potomac Electric Power—5½%	17 "
San Diego Gas & Electric	15 "
Sierra Pacific Electric	26 "
Wisconsin Electric Power	19 "
Wisconsin-Michigan Power	13 "
Arithmetic Average	20 shares

utilities to their customers in the 1916-1925 decade, the average dividend rate of 30 representative utility preferred stock issues sold through investment bankers in the 3-year 1945-1947 period was slightly under 4 per cent, with the average for 10 preferred stocks sold during 1946 as low as 3.62 per cent, and the great bulk of these offerings was purchased by institutional investors. Moreover, the average bankers' spread, or the difference between what underwriters paid for these issues and their price to investors, was slightly under 2 points or less than 40 per cent of the cost to utilities of selling their preferred stocks to their customers in the 1916-1925 period. This is fully set out in the accompanying tabulation.

The proposal that public utilities sell their equity securities to their customers, either outright or on the instalment basis, raises many fundamental questions. Will consumers of electricity and gas who were chary of buying the preferred shares of their serving utilities thirty years ago, when they carried dividend rates of better than 6 per cent on the average, now be willing to buy the same class of stocks when they pay only 4 per cent? Of course, the wages invested funds can command today are substantially lower than they were thirty years ago, and investors would have difficulty in finding an investment

Company	*Average Holding*
Consolidated Edison of New York	63 shares
Consolidated Gas of Baltimore—B	32 "
Consolidated Gas of Baltimore—C	41 "
Cleveland Electric Illuminating	60 "
West Penn Power	49 "
Arithmetic Average	49 shares

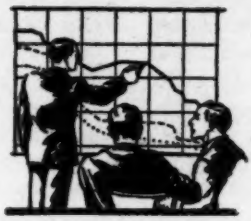
yielding more than a 4 per cent return with security comparable to that offered by the average utility preferred stock.

AGAIN, utilities had little difficulty, even thirty years ago, in distributing preferred issues through established investment banking channels when markets were booming and investment demand was high. It was only after World War I began abroad, and particularly after our participation in that fuss, that war demands for money tightened the security distributing machinery of the country and made utility preferred issues difficult to sell. Likewise, during early depression years, and especially during the period when the New Deal was leveling its biggest guns at electric and gas utilities, investors became chary of participating in an industry under violent political attack. Should comparable conditions develop in the future, the security markets doubtless would become disturbed. But it is equally certain that local conditions in every utility service area would follow the same pattern and utilities would find it as difficult to sell equities to their customers as investment bankers were finding it to sell similar securities to their customers.

The sale of equity securities on the instalment plan by utilities to their customers might expand their ownership during periods of high national income and rising stock prices, but it does not appear a practical method of raising capital or extending local ownerships during stormy days. Years ago, American Telephone and Telegraph adopted a policy of selling its stock to employees on an instalment basis and so long as the quoted price of the stock continued to rise or maintain an even keel, instalment payments were made with a fair degree of regularity. But when the price of the stock turned down and fell below the level at which the stock had been purchased, most employees quit paying and the contracts had to be terminated. Being people, telephone employees refused to pay more for the stock they had contracted to buy than the current market price.

PEOPLE buy a variety of durable goods every day on the instalment plan and think little about the daily wear and tear that lowers its value while it is being paid for. The buyer of a new car, who finances his purchase through a bank or finance company, knows hazily that his car is worth 20 per cent less by the time he has driven it a block from the dealer's showroom. By that time, it has become a used car. But because nobody hangs a price tag on it every day, he either fails to realize or doesn't worry about the drop in value. Unlike thirty years ago, every sizable community in the country now has a securities dealer and a newspaper with a financial page and, between them, the investor in the common or preferred stock of the utility serving him has the current market price of his holdings called to his attention daily.

When the buyer of utility equities sold to him by the utility itself sees his shares selling well under the price he agreed to pay for them on the instalment plan and he has not completed payment, his natural inclination is to quit paying. In that event, his contract must be canceled and the amount paid on his shares returned to him with interest to avoid making an enemy of



Company	1945 Dividend Rate	Price to Company	Price to Public	Points Spread
Central Electric & Gas—X	4.75%	102.76	106.00	3.24
Central Ill. Elec. & Gas	4.10	100.09	104.00	3.91
Central Power & Light	4.00	101.15	102.75	1.60
Florida Power Corp.	4.00	100.18	101.25	1.07
Idaho Power	4.00	104.00	105.50	1.50
Monongahela Power	4.40	101.03	103.50	2.47
New York Power & Light	3.90	102.30	104.00	1.70
Sioux City Gas & Elec.	3.90	100.28	102.00	1.72
Southwestern Pub. Serv.	4.375	108.55	110.50	1.95
Union Electric of Missouri	3.70	100.55	101.75	1.20
Arithmetic Average	4.1125%	102.089	104.125	2.036
	1946			
Buffalo Niagara Electric	3.60%	101.42	102.85	1.43
Central Maine Power	3.50	100.08	101.50	1.42
Central New York Power	3.40	100.15	101.50	1.35
Indianapolis Power & Light	4.00	113.63	115.00	1.37
Iowa Power & Light	3.30	99.76	101.50	1.74
Kansas City Power & Light	3.80	100.91	102.70	1.79
Missouri Power & Light	3.90	102.07	104.00	1.93
Potomac Edison	3.60	100.16	101.75	1.59
Public Service of Indiana	3.50	98.60	100.00	1.40
Wisconsin Electric Power	3.60	98.65	101.00	2.35
Arithmetic Average	3.62%	101.543	103.18	1.637
	1947			
Birmingham Electric	$4.20	97.25	100.00	2.75
California Electric Power—X	$5.00	100.00	104.00	4.00
Connecticut Light & Power—X	$4.00	104.80	107.00	2.20
Dayton Power & Light	3.75%	99.80	101.50	1.70
Delaware Power & Light	3.70	101.52	102.77	1.25
Florida Power & Light	4.50	97.10	100.00	2.90
Michigan Gas & Electric	4.40	99.00	101.00	2.00
New York State Electric & Gas	3.75	101.139	102.00	0.861
Public Service of Colorado	4.25	97.09	100.00	2.91
Toledo Edison	4.50	101.19	103.625	2.435
Arithmetic Average	4.205%	99.8889	102.1895	2.3006
3-year Arithmetic Average	3.989%	101.1736	103.1715	1.9979

X—$50 par value and calculated on basis of 2 shares for 1.

him. The same conditions apply to circumstances which might require utilities to reduce or omit preferred and common dividends during periods of depression. It is well enough for those of short memory to say "It can't happen here" but it did happen to many utilities during the early years of the 1930's. What the reaction of the instalment buyer of stock in his local utility would be toward completing his payment contract when dividends have been reduced or omitted can well be imagined.

No matter how remote, the possibility that the sale of utility equities by the issuing utilities to their customers may "backfire" and generate customer ill will proposes the question of whether customers should be exposed to the risks of equity ownership by utilities themselves. The old adage—"Let the buyer beware"—has been changed during the past fifteen years to "Let the seller beware," and various acts of Congress, administered by the SEC, were designed to protect the buyer of securities.

Furthermore, if we buy a radio or a vacuum cleaner or a clothes washer that goes haywire, we are not nearly so likely to blame the manufacturer as the dealer who sold it to us. By the same token, when we buy a stock that goes sour, it's not the company that issued the shares but the broker who induced us to buy them that we call a crook. But in any customer ownership activity, the utility acts both as the issuer of the securities and the broker or investment dealer. And the utility will be in for a double cussing out, if anything slips.

To play absolutely safe and incur no risk of damaging customer and public relations, should not utilities sell only their soundest securities—their bonds and debentures — to their customers? But this, obviously, would defeat the objectives of a customer ownership campaign.

Managed Economy's Failure

"BOTH *in news dispatches of foreign correspondents and in the discussions of the problems of the war-ravaged European countries one is almost sure to run across the glib assertion that the postwar problems are 'of course too great to be handled by a private enterprise economy.'*

"Just how anyone knows that to be true is one of the matters which escapes us. The fact is that in the countries now undergoing the worst suffering private enterprise has been given no opportunity to try its hand. In some of them any private enterpriser who even offered a suggestion would be asking for an invitation to face a firing squad.

"If the postwar experience has proved anything it seems to us to have proved that the managed economy on Socialist lines is thoroughly incapable of solving the problems of reconstruction or indeed doing anything else except to create scarcity and to ration it."

—EDITORIAL STATEMENT,
The Wall Street Journal.

Is Long-distance Electric Power Transmission Economical?

Ever since the completion of Hoover dam dramatized the fact that electric power could be economically transmitted over hundreds of miles, the economics of long-distance power transmission has challenged the attention not only of the engineering technician, but also company executives, public officials, legislators, and others whose duties require them to participate in planning the location and operation of large-scaled power projects. What is the status of the art of economical high-voltage transmission today? With important questions on steam *versus* hydro generation demanding solution and the complication of atomic generation dominating the future long-range prospect, the following authoritative analysis of trends in high-voltage transmission should prove timely as well as enlightening.

By R. C. BUELL*

What are the trends in high-voltage transmission and what are their significance for five, ten, or twenty years from now? That is one of the most important questions facing power company executives today, and how well it is answered will determine in a large extent the future pattern of central station growth.

One of the best ways of predicting these future developments is to evaluate the engineering problems involved in light of the specific economic factors they present. Such an evaluation leads to the following conclusions:

First, important economies in transmission can be obtained by loading lines to their maximum permissible load.

Second, for lines of less than 100 miles' length, the cost of the step-up and step-down transformers limits the maximum economical voltage to those high voltages already in use.

Third, line compensation by means of series capacitors or other means can be expected to be useful for distances above 200 miles.

Fourth, solidly grounded neutral systems with modern lightning arrest-

*Central Station Engineering Divisions, General Electric Company, Schenectady, New York. See, also, "Pages with the Editors."

ers and line shielding will permit important reductions in transformer and line insulation, with resulting savings.

FIFTH, grouped, or bundle, conductors look promising for use with the higher voltages.

From a large number of actual costs and estimates it is possible to plot average cost per mile of transmission lines against the line voltage, as shown in Figure 1. Three different conductor sizes are shown in the lower-voltage regions.

The cost of another component of a transmission system, the transformers, is shown in Figure 2. The dotted curve in this figure shows the reduced cost effected by using the next lower-voltage level of insulation in their design.

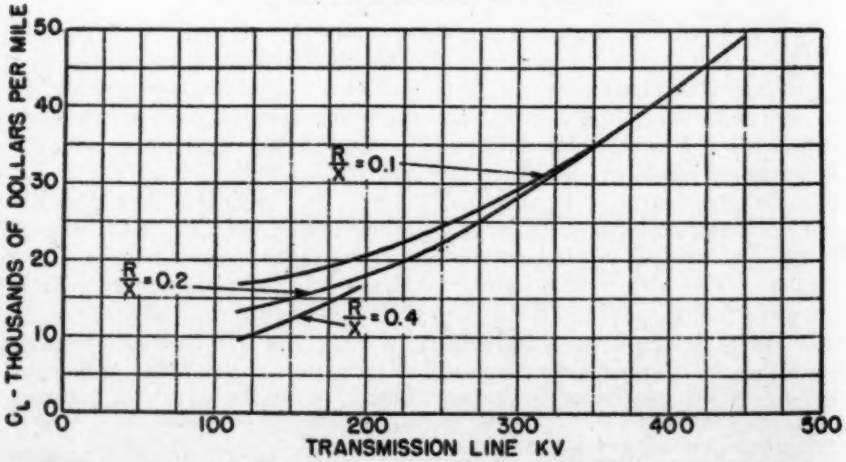
Cost curves for circuit breakers, the third component of the transmission system, would be of similar shape, with similar reduction in cost for using a reduced insulation level.

THIS practice, of using a lower-basis insulation level than the standard, chiefly for voltages of 230 kv and above, is being generally accepted for several reasons.

First, the protective ability of modern arresters and overhead ground wires is generally recognized. Secondly, experience indicates the desirability of grounding high-voltage systems solidly, thus permitting the use of lower-voltage rated arresters. Third, the protective margins between a reduced basic insulation level, that is, the next lower-voltage class, and a grounded neutral arrester is equal to or greater than the protective margin between the standard basic insulation level and an ungrounded arrester. This holds

FIGURE 1

Transmission Line Cost Per Mile Compared with Transmission Line Kilovolts



The "R" over "X" figures indicate different sizes of conductors in the low-voltage regions.

from the highest-voltage arrester down through 115 kv. Fourth, equipment is now being built to withstand basic impulse levels.

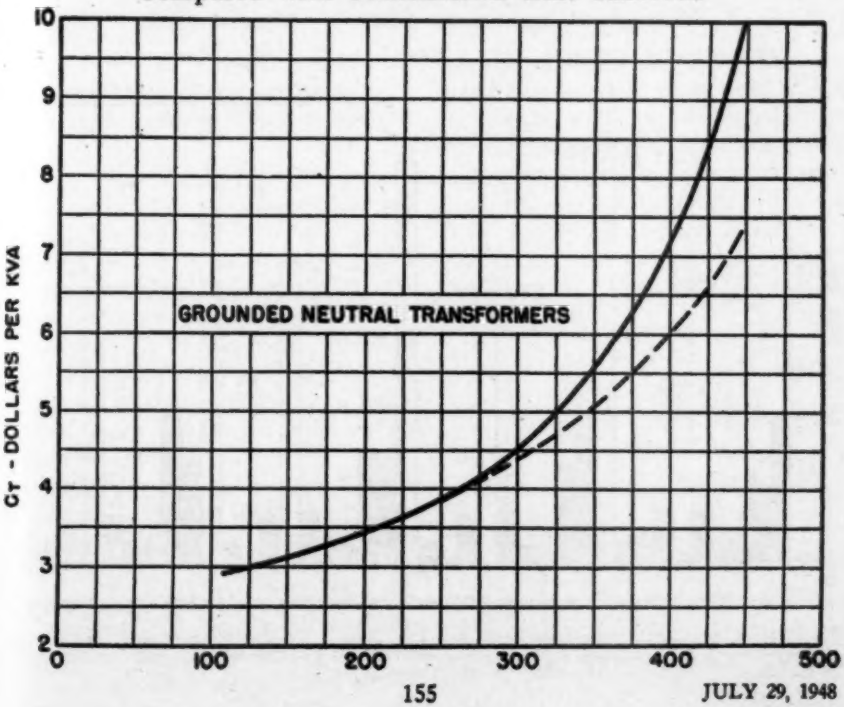
This practice, therefore, offers economies of 10 to 15 per cent in the higher-voltage levels by virtue of the lower cost of insulation. Furthermore, it does not impose upon the electrical manufacturing industry the burden of building equipment of two insulation levels for each voltage class. Similar widespread economies are available at the lower voltages below 230 kv, and some operating companies are taking advantage of it, particularly at 138 kv.

If the cost of transmitting a kilowatt hour of energy at various voltages is computed using the cost of a simple transmission system consisting of the line, transformers, and circuit breakers, and assuming that the annual load factor is 50 per cent, 4 mills per kilowatt hour is the cost of energy losses and 11.5 per cent is needed for taxes and interest, it would be found that for a 100-mile line 287 kv gave the lowest cost per kilowatt hour provided the power load transmitted was the maximum the line could carry. This would be a load of 325 mw.

For loads larger than this, 287 kv

FIGURE 2

Average Cost of Installed Transformers (Sending and Receiving) Compared with Transmission Line Kilovolts



is still the best voltage as it is cheaper to use two 287-kv lines rather than to go to the next higher voltage class of 360 kv.

With the same assumptions but using reduced insulation 360 kv would give as low a cost per kilowatt hour as 287 kv but the load per circuit necessary to get this same low cost is 500 mw instead of 325 mw.

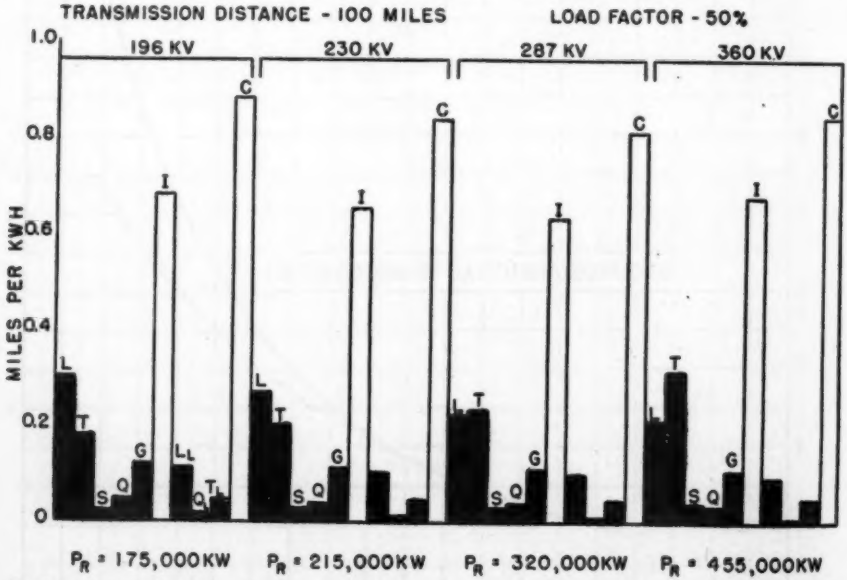
For longer lines, studies indicate that 287 kv is still the cheapest voltage at 200 miles but as the line length increases the most economical voltage increases, and at 600 miles 450 kv with 500 mw per circuit is most economical.

For many years the use of series capacitors to increase system stability and the load carried per circuit has been considered. Properly applied this device can nearly double the amount of load per circuit. Using a series capacitor with an estimated cost of $10 per kva and equal to 50 per cent of the reactance of the line, reduction of transmission costs of 10 to 30 per cent can be shown for lines above 200 miles in length and voltages above 287 kv.

Another innovation which looks very attractive in the high-voltage field is the use of grouped or bundle conductors. This consists of using two,

FIGURE 3

Cost of Transmission of a Hundred Miles over Four Different Voltages: Component Costs of Transmission



Explanation of Symbols: L—Line cost; L_L—Line losses; T—Transformer cost; T_L—Transformer losses; S—Switching cost; Q—Condenser cost; Q_L—Condenser losses; G—Increased generator cost; I—Investment cost; C—Total cost.

¶ "WHAT *are the trends in high-voltage transmission and what are their significance for five, ten, or twenty years from now? That is one of the most important questions facing power company executives today . . .*"

three, or four conductors of smaller size in place of one single conductor per phase. This results in lower surge impedance, lower inductive reactance, and higher capacity of the line. The corona loss for the same total cross section of conductor will also be lower. For instance, at 287-kv two one-inch conductors spaced 2 feet apart will give the same corona loss and resistance loss as a special 1.4-inch conductor, but with a 25 per cent lower inductive reactance. This lower reactance will permit a 33 per cent increase in the load carried. However, such a line with the bundle conductor arrangement will be more expensive to build because of the higher wind and ice loading, requiring sturdier towers and more line material.

To check the foregoing, a general study of a specific problem was chosen. What would be the proper voltage to use for a million-kva generating station with its load 200 miles away? Three voltages were considered, 230 kv, 287 kv, and 360 kv. A stability study was made at the three voltages so that sufficient lines would be provided to give the same margin for all cases.

At 230 kv it was necessary to use eight lines if they were run straight through from the generating station to the load, but with an intermediate switching station seven lines were adequate. At 287 kv six straightaway lines were necessary, but only five with the intermediate station; 360 kv required five straightaway lines, and four with the switching station.

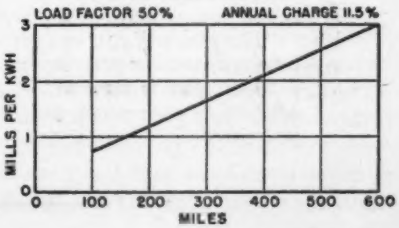
Costs for the transmission system of this particular problem would be about $43,000,000 for the 8-line 230-kv system and $40,000,000 for the seven lines with the switching station.

For the 287-kv lines the cost would be almost identical, but at 360 kv it was a few per cent higher. This was the investment cost, and did not give the complete indication of the total operating costs.

A somewhat similar study was made for the load 100 miles from the generating station. In this case 196 kv was also considered. Figure 3 shows the results of this study in which the line was loaded to its most economical limit and the switching, reactive power, and generating components of the investment are shown with the total investment cost. The line losses, reactive losses, and transformer losses are added up to show the total cost of transmission.

FIGURE 4

Minimum Cost of Energy Transmission



To reduce all this data to one simple curve is rather presumptuous, but by using the most favorable conditions and all the known means of reducing the cost, the final results might be combined as given in Figure 4. Such a result can be compared with other means of transporting energy, such as coal by freight, oil by pipe line, etc.

The results obtained in this study are of necessity broad and may not be applied to obtain specific conclusions over the entire field. However, they are indicative of some of the main trends in power transmission at high voltage.

Flood-control Plan Based on Conservation of Soil

"SOIL conservation may get a big-scale trial, at last, as a means of preventing floods.

"Some years ago, the Army Engineers mapped out a flood-control plan for the Missouri valley. It called for a series of big dams, as such plans usually do.

"But farmers got up on their hind legs. Those dams would flood much of the best bottom land in Missouri, they said. Why not give soil conservation a real try? Maybe, they said, one good way to prevent a flood is to keep so much water from getting to the river. At least, they wanted to see this idea given a big try, for once, not just the usual halfhearted one.

" 'If we need dams after that (and we will), we'll build some of them, too,' they said.

"The result is a new plan which may become the nation's biggest soil conservation enterprise. The area chosen for the proposed $200,000,000 trial is the 15,300-square mile Osage river basin.

"The Osage, a tributary of the Missouri, rises in Kansas, and winds across Missouri, through the Lake of the Ozarks, until it joins the Big Muddy near Jefferson City.

"Here are some of the things the plan calls for: contouring 450,000 acres; terracing 2,000,000 acres; building 31,000 farm ponds, and 2,300 miles of farm waterways.

"In addition, a vast amount of work on ditches and streams will be needed.

"It will also mean wholesale changes in farming—for instance, a cut of 20 per cent in clean-tilled crops, more grass, and more livestock.

"Soil Conservation Service officials estimate crop yields, however, would be boosted $100,000,000 a year by these measures. Water run-off may be cut 5 to 30 per cent.

"The plan will cost an estimated $20 an acre on the farm land involved, plus the government's cost on waterways.

"The plan is now to be submitted to Congress. If it is adopted, it may serve as a guide for similar work on other watersheds."

—EXCERPT *from Farm Journal.*

Single Purpose Flood Control Pays Off in Ohio

PART II

The "single-purpose" approach of the citizens of Ohio's Miami valley to the problem of flood control has proved to be a successful example of what can be accomplished by the people directly interested for their protection, without grants by the Federal government, with the resulting loss of local independence.

BY JOHN P. CALLAHAN*

PERHAPS the people's sense of security from flood control in the Miami valley of Ohio stems from the repeated success performances by their dams. Surely, then, it would be strengthened in knowledge of the fact that the men who decided on the type of dam went back into archeology in their study of the valley's geology. According to Colonel Deeds, the engineers found that, in ages past, the Miami valley was covered with ice to a depth of 2,000 feet or more. That ice sheet had crept down from the north, carrying with it vast quantities of earth, sand, gravel, and boulders. As it melted, it formed great streams of water flowing in grooves in the underside of the ice. The material which it carried was deposited in this upside-down groove. In fact, he said, that happened three times in the Miami valley during the ice age. When all the ice had melted, it left the ridges where they are now up and down the valley. Geologists know them as terminal moraines.

His references to the valley's geology, he said, were made because of their influence on the final decision to build the dams of earth. To properly build an earth dam, loam, sand, gravel, and boulders are required. The terminal moraines, he added, have an abundance of these ingredients. From them, it was possible to build dams which, in effect, are synthetic hills even better

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suited to their purpose than the abutting "eternal hills."

As a further interesting result of their studies indicated, the presence of rock formations were near enough to the surface to be utilized. All of the massive concrete units in the projects have their foundations located on solid rock. A subsurface study included over 10,000 lineal feet of "wash borings" and over 1,500 feet of "diamond drill" rock borings. Over 900 holes were made. More than 2,000 samples from these borings are in the museum housed in the Miami Conservancy District administration building. As a precautionary measure, the tunnels were built with twice the cross section so that a flood could have been taken through them, should one have occurred during construction when no spillway was available. After the completion of the dams, the tunnels were reduced to their present cross section by back filling and paving.

WHEN the engineering examination of the Miami valley was begun, an investigation to determine the maximum possible rainfall and run-off was one of the first to be started. One of the initial tasks of the surveyors was to record the high water marks from one end of the valley to the other. Three engineers spent nearly a year in Washington where they were given full access to the records of the United States Weather Bureau. One engineer was sent to Europe to make a similar investigation of rainfall records. Among others, he reviewed the records of the valley of the Danube dating back 900 years. Records of the Seine in Paris had been kept for 300 years. It is interesting to note that high water records of the Tiber river in Rome date back 2,300 years. This study was the most comprehensive ever made. Other engineers were calculating the run-off which would result from heavy storms centering simultaneously over different parts of the watershed. As has been proved by actual test, at the dams, it would require a flood nearly one and a half times that of 1913 to bring the crest to spillway level, which is 15 to 19 feet below the top of the dams, at which elevation the dams are about 100 feet thick.

Colonel Deeds is quite proud of a comment made to him by an outstanding Army man, General H. M. Chittenden, who told him that "in all my experience I have never seen any project that has been so thoroughly investigated and so thoroughly planned, to which the Panama canal is no exception."

SOMEWHERE between the Tennessee Valley Authority's multipurpose dams and the Miami Valley Conservancy District's five single-purpose dams, lies the colorful Muskingum valley in southeastern Ohio. According to Bryce C. Browning, secretary-treasurer of the Muskingum Watershed Conservancy District, it is "the cradle of the most extensive experiment in soil and water conservation in the world." Rightly or wrongly referred to as such, it is true that this watershed of more than 8,000 miles is today the scene of numerous studies and action projects dealing with flood waters and soil erosion. The valley has a $45,000,000 system of 14 flood-control and water conservation reservoirs.

The people in the Muskingum valley are rightly proud of this 15-year-old

coöperative accomplishment by Federal, state, and local agencies. Its creation, on June 3, 1933, like that of the Miami Conservancy District, was made possible by passage of the Ohio Conservancy Act of 1914. And, like their neighbors in the Miami valley, the people in Muskingum have known floods, although their casualty list, after the 1913 disaster, was limited to two persons. At Zanesville, located in the heart of the Muskingum valley, where the drainage concentrates, the record high water level in 1913 was 51.8 feet — 15 feet higher than the previous record made in 1898, and 14.2 feet higher than the highest mark made during the 1937 flood. The property damage, however, ran high, exceeding $3,000,000. Over 3,400 of the buildings in Zanesville alone were under water, and 157 of them were completely swept away. In addition, railroads and utilities lost close to a million dollars in property and equipment.

PERHAPS one of the homeliest histories ever written about a city's crisis was the 94-page book, "Zanesville in the Flood of 1913," by Thomas W. Lewis. His publisher, A. E. Starr, of Zanesville, applied "the entire net proceeds" from the sale of the book "to the purchase of appropriate valor medals" which were "presented to all the Zanesville 1913 flood heroes of whom we have a record . . . " The author and the publisher—in a 73-word sentence—dedicated the book to "those who . . . put their own lives in peril . . . and to those who . . . gave abundantly of their substances and energy in order to shelter, sustain, and restore to their homes Zanesville's flood sufferers . . ." Lewis' history abounds with literary niceties that take it out of the realm of conventionality without, at the same time, any semblance of hysteria. Selected at random, this excerpt well exemplifies the quiet striving for complete detail—a quality frequently missing in the more flowery language characteristic of that era:

> James H. Lee, Frank Armstrong, and Joseph Ball, members of the firm of Armstrong & Company, owners of what is known as the Drone mill, located at the foot of Linden avenue, went, on the evening of the 25th, with nine men, into the warehouse to save some wheat and flour. The Licking river came up so fast that after a while they were forced to break into the elevator, whose topmost floor stood nearly 100 feet from the street. Safety was assured there if the elevator should stand firm, but would it? Suppose the mill across the street or the warehouse alongside should go out, and, pulling on the cables attaching them to the elevator take it out, also? Or, suppose the Muskingum should come over the levee and cut the foundation from under that tall place of refuge?
>
> The imperiled men could and did avoid the first danger by severing the two cables, but when, after a night of feverish suspense, daylight showed the Muskingum to be pouring over the Linden avenue levee, the other danger seemed imminent, and to get down

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from that lofty perch and into some of those rescuing boats which they could see saving scores of people hourly from the rear of Linden avenue houses and from Lee street homes, was the one overmastering desire of the millers . . .

COVERING about one-fifth of Ohio, the Muskingum valley spreads throughout 18 counties—an area that includes 8,038 square miles, most of which drains into the Muskingum river and its tributaries. Lending an aspect of distinction to the project, although some of the more vigorous proponents of free enterprise have insisted the Miami formula could have been applied to accomplish the same purpose, it is believed to be the first time that the Federal government joined in partnership with state and local governments in such an enterprise.

Here it might be stated that if there had been a free-spending executive in the White House, backed by a Congress just as magnanimous, the Miami valley might have been the recipient of the same aid that was given to Muskingum.

But in 1913, and for another two decades, the Federal government kept a tighter rein on the money which taxpayers gave for operation of the Federal government.

A total of $27,190,000 was contributed to Muskingum by the government, of which the initial $22,090,000 was applied to construction. The state granted $8,920,000, and the districts which benefited from the project assumed the cost of administration, engineering, and other expenses, estimated at a total of $9,000,000. The valley abounds in benefits for the 675,000 people who live in the watershed area. These benefits, second in importance only to the prime accomplishment of flood prevention, include constant preoccupation by the district managers with the problem of soil conservation. Unless siltation of the reservoirs could be prevented, the life of the dams would be shortened.

In other words, when the project is paid for (around 1970) its efficiency might be materially reduced. The people will have bought and paid for something that has partially disappeared. Equally important is the retention of productive topsoil. There would be little need to save the valley if soil erosion were permitted to go uncontrolled. But this possibility has been completely ruled out.

PART of the extensive soil conservation and correct land-use program includes the annual planting of 2,000,000 trees on hill land adjoining the reservoirs, thus providing cover for the land and protection for the soil during heavy rainfalls.

Unlike Miami, Muskingum dams have partially filled lakes. They cover 16,000 acres and have a combined shore line of about 350 miles, or more than Ohio's frontage on Lake Erie. However, little loss of farm land has been necessary because the dams were built across slopes too steep for farming.

The reservoirs control water flow during dry seasons, thus assuring farmers year-round irrigation. Indicative of the magnitude of the agricultural phases of the program, about 25,000 acres of the land acquired by the Muskingum Conservancy District are adapted to crop production. Here, a source of income that has helped eliminate assessments is the rental received from farm lands. Total capacity of the

Tennessee Valley Authority

"BEGGING an explanation from the proponents of the idea that the TVA principle should be spread throughout the West and the South is the statement that the Tennessee Valley Authority has flooded 700,000 acres of land through high dams, while only 362,000 acres were flooded in the greatest flood in the history of the Tennessee."

fourteen reservoirs is 1,539,200 acre-feet[1] (503 billion gallons) of which 1,326,400 acre-feet are reserved entirely for flood control, and the remaining 212,800 for water conservation.

[1] An acre-foot of water is 43,560 cubic feet, which is the volume of water that will cover one acre of land, one foot deep. Few persons realize the great volume of water which comes down a big river during a large flood. The Ohio river during the 1937 flood, for example, discharged a total of over 135,000,000 acre-feet of water at Cairo, although but 153,000 acre-feet of water passed that point during the hour when the flood was at its crest. During the same flood, 240,000,000 acre-feet of water passed Arkansas City, Arkansas, on the Mississippi, only 180,000 acre-feet of which went by during the hour in which the river was at its maximum crest. The volume of water that went by Arkansas City was enough to cover the entire state of Georgia to a depth of 6½ feet. The very size of these figures epitomizes the scope and magnitude of the problem which confronts the engineer when an attempt is made to control floods from large drainage areas by means of reservoirs.

ONE of the most socially beneficial aspects of the project was the enhancement of the area, both aesthetically and practically. The scenic beauty of the lakes, plus the recreational features, has earned for Muskingum recognition as the "playground of the Middle West." Nature must have recognized man's efforts to beautify what she overlooked: Birds, for example, have found year-round sanctuary on the wooded shores of the man-made lakes. In the migratory season, there is a preponderance of waterfowl, with ducks and shore birds flocking to the lakes in tremendous numbers. During half of one day recently two ornithologists identified sixty-six different species of birds at one sanctuary, including two bald eagles, seven types of ducks, and five species of shore birds. Upland

game has greatly increased with the restoration of habitat and the application of sound game management technique in which the valley has the guidance and assistance of members of the National Park Service. Indicative of the abundance of fish in the lakes, the creel limit has been the rule, not the exception, for most fishermen. Boating clubs have been active since the lakes were opened, and in winter skating and skiing have added to the popularity of the area. Last June the eighteen judges who represent that many counties in the Muskingum valley, approved plans for an additional $600,000 of recreational facilities.

WE spoke earlier about soil conservation in the Muskingum valley. Few of us really know the full meaning of the phrase; few of us realize that soil erosion is, literally, a cancer on the earth. Coupled with sediment damage, soil erosion slowly rips the land away and when the rains come —the floods come. "But, haven't we built dams to hold them?" Yes, but unless other precautions are taken against the efforts of nature to ravage the very structures set up to resist her onslaught, we will have worked in vain.

The existence of a dam is the major temporary assurance that the menacing force of a flood can be dissipated. But for every potential flood that is thinned out into lakes, or run off into manmade waterways, nature seeks to retaliate in another, almost unnoticeable way: Earth and rock shift, sedimentation fills into the reservoirs, water erodes the soil.

After declaring that the annual flood loss during the twenty years through 1944 was $100,657,000, Carl B. Brown, head of the sedimentation section of the Soil Conservation Service in Washington, told the Soil Conservation Society of America at its annual meeting in Omaha, Nebraska, last December, that the agricultural and land damages in the lower Missouri river basin after the floods of May and June, 1947, totaled $720,000,000. He also said that an analysis of the location of flood damages based on flood-control surveys made by the U. S. Department of Agriculture showed that 75 per cent of agricultural damages by floods occur in headwater valleys. The U. S. Forest Service estimates that the total flood and sediment damages amount to $250,000,000 a year.

IN the Miami District, soil erosion is watched closely and eliminated as frequently as practicable. The rate of deposit in the channels varies greatly, of course, depending on such factors as depth, pressure of water flow, and rainfall. The channel through Dayton, for example, has required no excavating in more than twenty years, while the river channel in Hamilton had to be cleared of about 550,000 cubic feet of deposits in 1932, due to conditions upstream. Gravel and sand had accumulated in the Hamilton channel at the rate of about 50,000 cubic yards a year. If this accumulation had been permitted to continue, eventually it would have reduced the channel capacity to the danger point. Subsequent work has indicated that the rate of deposit in the Hamilton channel has been slower in recent years but additional work probably will be necessary in a few years.

Being perverse, Nature neglected the Dayton channel. Engineers had hoped

that it would enlarge itself due to increased velocity, but the expected erosion did not take place as rapidly as anticipated and it became necessary to excavate. River transportation of sediment goes on at an amazing rate. The Missouri river at Kansas City transports not less than 125,000 acre-feet of sediment every year. Efforts to avert washing away of earth in the tributaries of main streams are being increased. But apparently not fast enough. More than $150,000,000 of the sediment damage occurs every year, including land damage by flood-water scouring and stream bank erosion.

MUSKINGUM, with its single-purpose dams, has been cited repeatedly by engineers as a comprehensive water conservation program embracing the recognized practices of soil conservation as well as a network of small dams and reservoirs located close to the source of floods. They prevent major flood damages, retain needed water in the soil, and make it available to serve community and industrial needs.

The strong support for single-purpose flood-control dams by a preponderance of engineers, both in industry and in the U. S. Corps of Engineers, prompts the question: Why has the Federal government spent close to one billion dollars on multipurpose dams, when two conservancy districts have given heartening, convincing proof that flood control can best be accomplished through construction of the single-purpose dam?

Begging an explanation from the proponents of the idea that the TVA principle should be spread throughout the West and the South is the statement that the Tennessee Valley Authority has flooded 700,000 acres of land through high dams, while only 362,000 acres were flooded in the greatest flood in the history of the Tennessee.

As recently as the last week in March, the Associated Press reported that flood waters surged over sections of ten northern states, in addition to New York and eastern Canada. About 2,000 persons were homeless in six eastern and midwestern states, and nearly 6,000 persons were made idle by plant shutdowns.

FROM east to west the floods continue, year after year, with an average annual toll of ninety lives and $100,000,000 in property damage and loss.

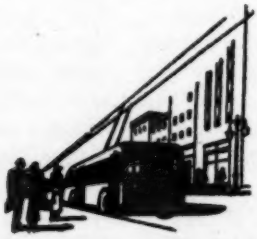
The Wall Street Journal recently carried a story on the current national flood picture which, summarized, showed that about 15,000 persons were made jobless this spring, temporarily in some cases, permanently in others. These people live in Illinois, southern New York, Cleveland, northwest Pennsylvania, the flood areas earlier this year. In Wichita, Kansas, a river town, 15 tons of bagged sand were put up along the banks. In Louisville, the folks expect the Ohio to overflow every year and they take the only defensive position they know: waterproofing of the buildings. In Grand Rapids, where the threat of the rising Grand river was the worst in forty-three years, industry functioned normally due to reinforced basements, walls within walls, and special flood pumps. Department stores in Pittsburgh are ready with aluminum or steel window barricades against the raging waters of the Monongahela or

the Allegheny. In Portland, Connecticut, the Gulf Oil Company has to empty its warehouse every year. The General Life Insurance Company, also in Connecticut, found $400,000 of securities covered with silt when the basement was flooded from the state-named river.

WHILE the country still needs more Miami and Muskingum valleys, slow progress is being reported. The Federal government has spent several millions of dollars on flood-control dams in tributaries of the irascible Allegheny and Monongahela rivers, the key post being the $37,000,000 Conemaugh dam on which construction is expected to be completed in three years. Two of the twenty dams that will tame the Connecticut river already are at work. At Hartford, 5 miles of dikes have been put up to protect the city, and the Park river has been robbed of its ferocity by being shooed through conduits for half a mile.

But the job is nowhere near done. If the people want socialized protection from floods, the Federal government's handsome grants can be obtained, but with a hitch: You forego just a little bit more of your independence. Like soil erosion, it isn't noticeable until all of a sudden—it's gone. Those stanch advocates of free enterprise and other right nice-sounding synonyms for democracy would do well to plug for quick adoption of the Miami valley idea—the people's dams, built with the people's money.

It's a grand idea, if you want to make it work.



Nearly 5,000 Trolley Busses Now in Use.

"IN recording a banner year, trolley bus operating companies again topped operating figures for all previous years and delivery of this type of vehicle reached a record high with 936 in the hands of operating companies as of December 31, 1947. To date, this is the largest number of trolley busses added in a single year, the previous high being 597 in 1939. Although the 936 delivered only came within 50 per cent of reaching the 1,881 trolley busses on order for 1947, it far surpassed the 30 per cent of the ordered total delivered in 1946. Manufacturers' reports indicated that 1,008 of these vehicles were produced in 1947 for delivery in the United States and 170 for export."

—CASWELL SPEARE,
Assistant editor, Bus Transportation.

Washington and the Utilities

The Big Plans of NSRB

It was President Truman who temporarily stemmed the confusion over the "mandatory allocation" provision of the "draft industry" section of the Selective Service Act. He did this by issuing a virtual promise not to exercise the powers given to him in the new law to allocate steel distribution or establish other controls for vital materials.

Does this mean no controls of steel, etc.? Far from it. The feeling in industry circles is that the President's decision to make no use of the new law is only a stopgap to relieve production snarls pending formulation of a more carefully worked out program for controls. The National Security Resources Board is completing the draft of a proposed Emergency Powers Act. This draft contains 25 titles which would deal with all phases of materials, man power, and price control in the event of a war emergency. The NSRB also has reorganized its own setup into four main divisions, which correspond roughly to the four major war agencies of World War II (War Production Board, Office of Defense Transportation, War Manpower Commission, and Office of Price Administration). Economic mobilization policies of Chairman Arthur M. Hill and his staff of the NSRB are based upon what they term the theory of economic readiness. In view of the present international tension and the potentialities of attack from the air, it is held, long-range planning, essential as it is, is not enough to insure national security. The theory of economic readiness calls for doing things now to keep the United States as fully prepared as possible for mobilization or war if such emergency should arise. The key word is "now."

According to this theory, the rôle of the board should not be confined to that of merely "advising" the President, but should be expanded to include active coördination of all economic mobilization activities. This has involved the new civilian board in Washington's unceasing struggle for power among governmental departments, bureaus, and agencies, particularly on the issue whether the military or civilian authorities shall control the nation's economy in time of war.

Hill and his staff have been accused in some quarters of "grabbing for power." The feeling in the board, however, is that if any criticism were justified, it would be that the board has failed to move quickly or vigorously enough to exercise the power granted to it by Congress. A study of the legislative history of the National Security Act of 1947, under which the board was created, has convinced the board's experts that Congress intended it to become the top coördinating agency in economic mobilization.

In the present situation, it is held, this would include coördination of all current national security programs. Rearmament, the atomic energy program, European recovery, stockpiling, surplus war production facilities, and the like would be tied together in relation to their impact upon one another and upon the national economy as a whole.

This concept has been challenged elsewhere in Washington, notably by the Bureau of the Budget. Several weeks ago President Truman, on the advice of the Bureau of the Budget, disapproved Mr. Hill's recommendations which would have empowered the board to exercise final coördinating decisions in such matters. The President ruled that the

proper rôle of the board at this time was advisory in relation to both current problems and long-range mobilization planning.

PREVIOUSLY, Mr. Hill had asked Ferdinand Eberstadt, former vice president of the War Production Board, to make a survey of the board's authority and functions. This was to include the board's relations with other agencies, and any legislation, executive orders, or instructions needed to provide the board with authority to carry out its responsibilities under the law.

Mr. Eberstadt's newly finished report has not yet been made public, but it is understood he is recommending that the President designate the board as the agency responsible, under presidential direction, for integrating present and future policies and procedures relating to civilian-industrial aspects of all national security programs.

That Northwest Shortage

SPECIFICALLY dealing with one of the more acute problems of power supply was the memorandum sent to NSRB Chairman Hill on June 8th by Edward Falck, the board's chief consultant on power and utilities. Mr. Falck's memorandum said in part:

> The board's interest in this matter is based solely upon national security considerations. During the last war the nation benefited greatly because power could be expanded rapidly in the Northwest area. The Grand Coulee and Bonneville dams had been built before the war, but only a few generating units had been installed at Bonneville and none at Grand Coulee. Accordingly, it was possible to install additional units within a very short period. In contrast to that position, the power systems operating in the area now anticipate potential deficits of 3, 10, and 18 per cent, respectively, of capacity under adverse hydro conditions in 1949, 1950, and 1951. The population and industrial load of the Pacific Northwest have increased rapidly, and will provide a significant proportion of industrial production in the event of war. Moreover, it must be emphasized that this area has become a center for aluminum production and for the atomic energy program. To meet requirements, action should be taken to carry out all feasible expansion of private, municipal and Federal projects.
>
> Congress has indicated clearly its interest in the atomic energy program, and in rapid armament expansion, including the Air Force expansion which requires large quantities of power to produce aluminum for construction of planes. At present the Pacific Northwest does not have sufficient facilities to do its part in rapid effectuation of those congressional objectives. Due to a shortage of power, it will not be possible for the next several years to obtain full output of existing aluminum pot lines. Neither will it be possible to expand production of aluminum, unless the power projects now under consideration receive increased appropriations to enable accelerated completion.
>
> We have been advised that the proposed construction programs of the Federal sponsoring agencies could be completed on an accelerated schedule under present conditions of material delivery and man-power availability if adequate appropriations were available.

Falck accordingly suggested that the board recommend increasing congressional appropriations for Albeni Falls, Yakima Ridge, Chandler, Hungry Horse, McNary, and Detroit. Falck had previously sent Chairman Hill a staff study indicating that under adverse conditions the Northwest might have a deficit between capacity and potential loads in 1951 of 1,060,000 kilowatts.

REA's Big Year

GREATEST year in the history of REA as far as financing and line-building activity are concerned will be the coming twelve months embracing fiscal 1949. REA Adminstrator Wickard has been stressing this in his speeches at the REA field staff conferences held in Roanoke, Virginia; Kansas City, Missouri; and at Butte, Montana. The last was held late in June and was the final meeting in the series. Purpose of the meetings was to plan the activities of REA for the coming year. The agency has received loan applications totaling $360,000,000. Funds available to meet the demands for loans total $500,000,000, of which $100,000,000 is "carry-over" from fiscal 1948.

Wickard advised his listeners to "think

in terms of building and operating electrical systems rather than electrical lines." He added that "area coverage, load growth, and ultimate system studies will be more important next year than in any previous year." Some speculation already has arisen that REA officials are looking ahead to the time when they will have "worked themselves out of a job" as far as line-building financing is concerned and may have to turn REA's organization and abilities to "other things." Construction plans of the agency include the erection of 150,000 miles of line and the connecting of 375,000 new customers.

So far, it should be noted that REA is restricting the number of generating plant approvals. Many applications, REA headquarters states, have been rejected because of "incomplete documentation." It will be recalled that REA minimized the number of generating plant loans in answering congressional questions along this line during the session. For the present, REA doubtless prefers to concentrate on developing rural load demand through distribution facilities. REA-financed rural power systems purchased at wholesale 3,082,267,051 kilowatt hours of electric energy during the year ending June 30, 1947. REA borrowers, chiefly co-ops, purchased 60.4 per cent of the total from private utility sources, and 39.6 per cent from publicly owned or "nonprofit" suppliers.

Box Score for 80th Congress

THE over-all impression presented by the work of the 80th Congress does not measure up either to the glowing pictures painted by the Republicans or the terrible caricatures outlined by the Democrats, Laborites, Wallacites, and other miscellaneous dissatisfied groups. As a matter of fact, the work of the 80th Congress shapes up as about average with the work of previous congressional sessions, making due allowance for relatively increasing pressure for legislation with the passing years.

The 80th Congress set no records either by way of enacting laws or repealing laws, or even refusing to pass bills introduced. The record with respect to passing the most laws was set by the 70th Congress under Coolidge.

The 80th Congress passed a little less than 10 per cent of all bills introduced, which is just about average over the past two decades. Here is a breakdown box score on bills introduced, resolutions introduced, committee reports, and laws enacted:

	Senate	*House*	*Total*
Bills introduced	2,897	7,030	9,927
Resolutions introduced	559	1,355	1,914
Committee reports ..	1,772	2,448	4,220
Public laws enacted .			900

One record set by the 80th Congress was in passing three laws over the President's veto within the same week. However, even in the veto department, the over-all work of the 80th Congress set no records either high or low.

With respect to bills of interest to public utilities passed during the closing days of the session, President Truman provided no new surprises. Reluctantly he signed three bills on which there was some slight speculation that he might veto in order to put the Republican majority in Congress on the spot. These were: (1) the Government Corporations Bill which denied funds for the beginning of a steam generating plant for the Tennessee Valley Authority at New Johnsonville, Tennessee; (2) the Interior Department Appropriation Bill which would oust certain Reclamation Bureau officials at the end of the year and otherwise curb public power operations of that bureau; (3) the bill to extend the terms of the Atomic Energy commissioners for only two years.

In each instance President Truman denounced Congress for going contrary to his wishes. He called the limitation on the TVA program "irresponsible." He blasted the Reclamation Bureau restrictions as being attempts by special interests to punish sincere public servants and otherwise cripple the "public power policy of the government"—whatever that is. On the Atomic Energy Commission measure he observed that "politics and atomic energy do not mix."

Exchange Calls And Gossip

Pictures or No Pictures

THERE is lively controversy regarding the problem of what to put in an annual report of a corporation. There are two points of view, with many gradations between.

The best way to visualize the difference of opinions is to look at the two extremes. Here they are:

1. *Public Relations.* Sell the company. Sell private enterprise. Use art work: pictures, maps, home scenes, dramatized charts, and cartoons. Tell the company's problems frankly. Show what is being done for the community—agriculture, industry, and labor. In other words, cover the human water front.

2. *For Investors.* Give the stockholder all the cold facts. This includes primarily earnings, dividends, and outlook. Other important facts may include subsidiaries owned, complete balance sheet and financial data, territory served, type of business, and little else, unless it be more facts. In other words, aim the report at the investor's pocketbook.

The annual report of the American Telephone and Telegraph Company for the year 1947 is unique from the standpoint that it has not followed the present conventional pattern of putting on a fancy front. The cover stresses dignity and simple appearance. In dark blue print on a white background the name of the company and the date of the report are given. The well-known bell is its only adornment.

The first page contains a simple statement by the president: "The board of directors of the American Telephone and Telegraph Company presents herewith the management's accounting of its stewardship for the year 1947 for the information of stockholders, employees, telephone users, and the entire American people who have entrusted to private enterprise the responsibility for carrying on this essential service."

IT will be noted that the public relations point of view is expressed here tersely, but without embellishments. No pictures. The casual reader of the report probably would call it plain. But facts are there. The chief appeal to the eye consists of eight conventional statistical charts and one map showing the United States and the names of the companies serving the different areas. These are on the last five pages of the 34-page report.

The president's statement giving details of operations and financing comprises about a dozen pages. The headings are of interest:

1. Encouraging Progress.
2. Earnings.
3. Telephone Rates.
4. Plant Expansion and Improvement.
5. Bell System Financing.
6. Employees' Stock Plan.
7. Stockholders.
8. Employees.
9. Western Electric Company.
10. Research.
11. Overseas Service.
12. Benefit and Pension Plans.

It is interesting to note that most of the subjects discussed relate to progress, hopeful outlook, and general stability of the organization and its employees. The remainder of the report contains detailed operating and financial statistics followed by a certificate of audit.

In summary, it is clear that the American Telephone and Telegraph Company in its 1947 report leans definitely toward telling the serious investor what he wants to know without fanfare.

Cold Strike

In general, the Bell system is getting along very well with its organized workers. Most units of the Communications Workers of America (CWA) are signing 3-year contracts. These grant some concessions, but provide for no general wage increases. Practically all of the contracts contain a provision for reopening the wage negotiations twice within the 3-year period.

Recently, however, something new has been added—a cold strike. This new technique is being conducted by the CIO Association of Communication Equipment Workers against Western Electric Company, a subsidiary of American Telephone and Telegraph Company. The "cold" idea is simply an advertising campaign carried on by "sandwichmen." It announces that the union is attempting to get a 31-cent per hour wage advance for its members. The members of the union are engaged in installing heavy equipment for telephone companies.

The purpose of this new trick is to gain public approval for the union's requested wage increase. A secondary purpose is to attempt to gain a settlement without actually calling a strike.

An actual walkout would affect 30,000 installers in 44 states and the District of Columbia. Members of the union have voted in favor of a strike by a tally of about 9,300 to 4,000.

Wisconsin Solution

A wage dispute between a small independent telephone company and a local of the Communications Workers of America has been settled in accordance with Wisconsin's new utility antistrike law.

The union asked for arbitration, as prescribed by the law, when its dispute became deadlocked. The company involved was the Urban Telephone Company of Clintonville, Wisconsin. Workers had asked for a raise of 30 cents an hour. The arbitrators granted increases varying from 2½ cents to 10 cents per hour.

A similar situation is developing in the state of New Jersey where a utility antistrike law is in effect. No decision by arbitrators has been reached.

In St. Louis we find an entirely different situation. The Southwestern Bell Telephone Company and officials of CWA find themselves completely deadlocked on the wage question. However, U.S. mediators are trying to effect an agreement regarding a new contract which involves 48,000 employees of the Bell system company. The standard 3-year contract was offered by the company. It was rejected by the union.

This dispute represents one of the very few where CWA has not accepted the generally agreed to 3-year contract. One other instance is in Michigan where state and Federal mediators have been called in on a dispute between CWA and Michigan Bell Telephone Company.

Politics

Well, here we are in politics. It can't be avoided. However, executives in the telephone business have much for which to be thankful. Governors Dewey of New York and Warren of California, as possible President and Vice President of the country, understand the duties of regulatory commissions. They have had experience.

Dewey, if elected, is said ready to select as chairman of the Federal Communications Commission a man by the name of Robert F. Jones. This is gossip and should be considered as such. Mr. Jones is one of the most conservative members of the present FCC. He was a Congressman from Ohio before his appointment to the commission a year ago.

One of the best ways to appraise Mr. Jones' philosophy is to quote his own words from one of the most recent decisions of FCC in which he participated. This decision deals with the question as to whether or not a radio broadcasting station may be denied a license because it censored political speeches. In this particular case, involving Port Huron Broadcasting Company, Port Huron, Michigan, the company's license was re-

newed despite the fact that the commission claimed that the broadcaster had censored a speech in violation of the Federal Communications Act.

It is a confused mess because it involves the question of whether or not a broadcaster is subject to libel suits if it does not delete slanderous statements. Getting back to Mr. Jones, here are a few of his ideas as expressed in his separate remarks on the Port Huron Case:

> The [radio] industry and the public are entitled to hearings provided by the Administrative Procedure Act before the oblique rules of the commission established in the dicta become law.
>
> Who will challenge the majority opinion? Surely not WHLS [Port Huron Broadcasting Company]. It is told to go and sin no more—if it ever sinned.
>
> Since this case involves a grant of a renewal of license rather than the denial of one, it follows that there may never be a judicial review of this decision so that the licensees may be heard on these salient grounds. It is ironical that the commission, the champion of fair play, in the majority opinion enunciating "equal opportunity" under § 315 of the act [Federal Communications], the publisher of the "Blue Book" guide to the industry to air both sides of controversial questions, should choose this proceeding to govern the industry without first offering every licensee his chance to be heard. This method of governing the entire broadcast industry without giving all licensees the right to express their views is in my opinion an evil as serious as any the commission [FCC] is presuming to correct.

The above gives a fair idea where Mr. Jones stands. The Port Huron Case is interesting in itself. The net result of the FCC decision was that it banned any censorship of political speeches by broadcasting stations. Even though the speeches may contain possible libelous or slanderous material, the broadcaster is forbidden to delete such statements for which he may later be subjected to damage suits. FCC has ducked this ticklish question. In effect it says that this is a matter for Congress to decide. The commission conceded, however, that a broadcaster may refuse to carry political speeches entirely, provided it follows a consistent policy.

But once such a station is committed to such speeches it cannot censor.

Facsimile for WU

A FACSIMILE telegraph sender and receiver, designed to increase the speed of telegrams and cut operating costs, has been developed by engineers of the Western Union Telegraph Company, it announced recently.

After a demonstration at the 60 Hudson street, New York city headquarters, Joseph L. Egan, president of Western Union, described the device as "one of the most important developments in this streamlined era of rapid communications."

The machine measures 10 by 11 by 7 inches and weighs 20 pounds. It will be installed first in customers' offices that handle five to twenty telegrams a day.

Such installations will eliminate call boxes and messengers. For the present the teletype receivers in larger organizations will remain.

With the new device a message sent from New York should be at a San Francisco destination within ten minutes.

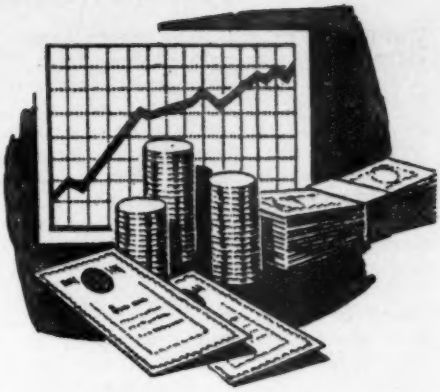
When a machine has been installed the sender of a telegram may write his message in longhand or type it on sensitized paper. This is attached to a cylinder on the machine. Electrical impulses, transmitted as a stylus passes over the message, flash over the wire. These cause the receiving machine to create an exact pictorial reproduction of the message.

The sending machine automatically becomes a receiver when the central office signals that it desires to transmit a message. Then a blank is placed in position. The sender-receiver in the telegraph bureau is equipped with a photo cell common to most facsimile transmitting, but the customers' device relies on the sensitized paper and stylus for operation.

Three thousand orders for the customers' machine have been placed with the Teleregister Corporation, a subsidiary of the telegraph company. First deliveries are expected in the fall. The machine has been in daily use by a score of business concerns in Newark, New Jersey.

The machines for the time being will be provided to customers free of charge.

Financial News and Comment



By OWEN ELY

Utility Financing—The Changing Fashion in Securities

SINCE the raising of construction funds is the most important financial problem of the utility industry at this time, the accompanying tabulation showing the types of securities issued, and the sales methods used, may be of interest.

Utilities made considerable use of bank loans in 1947, but no data are readily available on the total amount of short-term and serial loans. These totals are constantly shifting as loans are retired at or before maturity, from cash accrued from earnings or the sale of securities. Loans maturing in less than a year are customarily included in current liabilities, rather than in funded debt.

Short-term or serial notes (offered to the public) were popular in the 1920's but then went out of style and are now rarely issued. Apparently the insurance companies are not much interested in this

ANALYSIS OF UTILITY FINANCING

Kinds of Securities

- Bank Loans
  - Secured or unsecured
  - Temporary, term, or serial
- Notes—Short-term or serial
- Mortgage Bonds of various maturities
  - With or without sinking-fund or special retirement provisions
- Debentures
  - Short-term *v.* long-term
  - With or without sinking-fund or other special retirement provisions
  - Convertible or nonconvertible
- Preferred Stocks
  - With or without sinking fund or purchase fund
  - Convertible or nonconvertible
  - Junior preferred stocks, contingent extra payments, or other special features
- Common Stocks
- Warrants, Options, etc.
  - Offered in combination with other securities
    - Detachable or nondetachable
  - Offered separately

Methods of Sale

- Subscription by stockholders
  - Preëmptive rights only
    - Underwritten or not underwritten
  - Oversubscriptions subject to allotment
- Sale to employees (no underwriting)
  - Immediate sale or partial payment plan
- Sale to customers (no underwriting)
  - Immediate sale or partial payment plan
- Sale to one or more institutions
  - Competitive bidding
  - "Agency" negotiation
  - Direct negotiation
- Public Offering
  - Underwritten
    - Competitive bidding
    - Seminegotiated deal (consultation with selected bankers, with informal bidding)
    - Negotiated deal
      - New York or Chicago syndicate
      - Local banking syndicate
  - Selling group, without underwriting
    - New York or Chicago manager
    - Local manager

type of security, and serial or term bank loans have largely replaced them.

Mortgage bonds, during the earlier history of the electric power industry, were issued in some variety—on separate sections of the property, with junior liens and special features such as detachable warrants. Nowadays mortgage issues are highly standardized. They are usually issued under the same blanket mortgage as previous issues, with a 30-year maturity, and with two sets of scheduled prices for redemption or sinking-fund retirements geared to the original offering price. Mortgage provisions are so highly standardized that the average broker or small purchaser pays little attention to them (though institutions study them closely).

DEBENTURE issues were quite popular in the 1920's, particularly with holding companies. Long-term issues and even "perpetuals" were then in fashion. Now relatively short-term issues are in vogue. Last year several convertible debentures made their appearance, and it seemed likely that this mode of financing would prove quite popular, but it is reported that the SEC does not favor this vehicle. This year convertible debentures have been less in evidence, though Consolidated Edison issued some $57,000,000 convertible 3s, which have proved quite popular despite the underwriting handicaps imposed by the New York commission.

Preferred stocks were offered in great variety during the 1920's, but at present they are usually first preferred issues in various series, with dividend rates tailored to the market. However, there are occasional "junior" preferred issues, usually termed "preference common stocks," such as those of Philadelphia Electric and Public Service Electric & Gas (both of which are convertible).

Operating company preferred stocks have not been issued in much volume during the past year, because institutions have not been interested in buying them except on very favorable terms. This cautious attitude has been justified by the sharp decline in some high-grade issues resulting from the upward trend of money rates and the lack of market interest or support. The institutions favor the use of mandatory sinking funds which will retire a preferred stock issue in a certain period of years, making it similar to a debenture except for the less rigid claim on earnings. Recently several utility companies have substituted "purchase funds" which provide for purchases only when the preferred stock is obtainable (in the open market or by tender) at prices not higher than the original offering price (the purchase provisions being noncumulative). This method seems less popular with the institutions, since there is no longer a fixed "maturity," and no assurance in fact that any of the stock will be retired.

THE history of utility preferred stock financing in 1948 has been particularly drab and disappointing. Only one offering out of three or four has proved an unqualified success. A major difficulty has been the competitive bidding requirement of the SEC or local commission. A few weeks ago Pacific Gas and Electric was permitted to negotiate the sale of its 6 per cent preferred stock through Blyth & Company, and the issue proved very successful, going to a premium. But other recent offerings via the competitive bidding route have encountered difficulties. The sale of Consumers Power 4.52 per cent preferred at a 4.40 per cent yield basis was slow; the syndicate decided to "stand pat" on the original price, and only about 40 per cent had been sold after three weeks' effort. The Kansas City Power & Light 4 per cent preferred syndicate finally had to break the price in order to place the stock.

Due to these difficulties the latest bids have perhaps unduly favored the buyers' side, with the result that bids were rejected. The recently recapitalized Public Service Electric & Gas refused to accept the highest bid for its issue of new first preferred stock, which specified a $4.40 dividend and a 4.29 per cent retail yield; the company apparently did not want to fix a dividend rate of over $4.30, and thought it could do better a few weeks

later. Northern States Power (Minnesota) rejected Lehman Bros.' bid for a $4.80 preferred to be reoffered on a 4.60 per cent basis. Unusual delays in rejecting both bids led to considerable confusion and wasted expense and effort. Such difficulties might perhaps be avoided in future by having an "upset price" named in advance by the management, and possibly the underwriting groups could be reimbursed for some of their expenses.

Considering the record of the past year it is hardly to be wondered at that preferred stock yields have advanced more sharply than bond yields and that this class of utility financing is definitely in the "lame duck" class. Common stock financing has also been below normal this year. (See discussion in previous issue, pages 106-8.) Recent improvement in market conditions has not thus far encouraged the resumption of equity financing, though the SEC is now allowing greater latitude for negotiated deals.

PRACTICALLY all the sales methods listed in the accompanying table seem to have been employed in the past year with the exception of sales to customers, and local sales without underwriting. During 1924-33 over $1,600,000,000 securities were sold to customers by the electric power industry alone, but apparently present-day executives (or perhaps the commissions) do not like this sales method, which of course is slow and cumbersome. When competitive bidding was first ordered by the SEC, the commission had high hopes that much of the business would leave New York and Chicago and go back to "the sticks." But the difficulty with local syndicate or selling groups seems to be that the dealers require a larger profit, which the SEC apparently does not like.

It is difficult to apportion the blame for the current fiasco of preferred stock financing as among the commissions, the companies, and the bankers, but certainly some effort should be made to appraise the causes of failure and develop remedial measures.

Sales of utility securities direct to institutions (usually mortgage bonds with occasionally a debenture or preferred stock issue) do not constitute a major factor in the over-all picture. While there were 58 utility issues placed privately in the first five months of 1948, the largest was for $20,000,000 and a number of them were for $1,000,000 or less. The total amounted to only $187,000,000 out of total utility financing of $1,095,000,000. If the big Bell system issues were omitted from the total, however, the proportion would be greater.

In 1947 $522,000,000 out of $3,127,000,000 utility financing represented private sales, the percentage (17 per cent) being the same as in 1948. Private utility issues were only about one-quarter of all private financing by corporations in 1947. Including industrial and rail issues as well as utility, 39 per cent of all issues were placed through the private route last year. Obviously a much greater proportion of industrial business goes through private channels than utility securities. Over the past twelve years the ratios of private placements of utility issues have been about as follows:

1937	6%
1938	25
1939	33
1940	32
1941	42
1942	44
1943	12
1944	18
1945	21
1946	10
1947	17
1948 (5 mos.)	17

Seemingly the utilities are making little coöperative effort to present their joint views on shortcomings of the present system to the regulatory agencies, except for the publicity given to speeches at the various conventions. Perhaps they are looking forward to smoother political sailing in 1949.

Wall Street Comment on Utility Stocks

HAROLD YOUNG of Eastman, Dillon & Co. has issued a 10-page memorandum on *Southwestern Public Serv-*

ice, emphasizing the growth features of the company's territory and business as reflected in increased earnings and dividends. Originally a holding company, the company has freed itself from SEC jurisdiction by becoming an integrated operating company, with revenues 90 per cent electric, 6 per cent gas, and 4 per cent water and ice. (The latter services are being disposed of.)

The company serves more than half the carbon black plants of the United States, as well as large synthetic rubber plants. With Phillips Petroleum the largest single customer, pumping for oil and gas lines provides substantial revenues. The area served includes the southern edge of the wheat belt and the northern section of the cotton belt, plus other diversified crops. There are numerous processing and packing industries, grain elevators, cotton gins, dehydrating plants, etc. Cattle raising is important and a large meat packing plant may be established in the area. Many farms are adopting irrigation, with electric power used for pumping.

In most of the major communities served homes are being erected at a rapid rate, as well as business blocks to serve new enterprises of many types. The trends toward decentralization of industry and location of plants near raw materials may well result in future transfers of industry from more vulnerable (wartime) northern regions to the Southwest. Current growth is, of course, due in large part to the prosperity of the oil and gas industries. Recent new wells indicate the possibility of important oil deposits in certain sections of the company's area. Moreover, good farm land is still available at relatively cheap prices, indicating room for further development of agriculture.

THE company has been making large additions to generating plant capacity to keep ahead of growing demands for power—it is one of the few companies to fully anticipate postwar growth. (In 1946 the company installed almost 10 per cent of all the generating equipment obtained by the entire electric industry.) It has already installed 50,000-kilowatt capacity this year, with 15,000 kilowatts more expected in the fall and 25,000 around the middle of 1949; other large orders have been placed for 1950-52. By maintaining surplus capacity the company is able to sell substantial amounts of power to neighboring companies, thus making immediate profits on the new capacity. Most of the company's plants are steam plants using natural gas as boiler fuel; it is able to buy gas very cheaply, and is protected by contracts having no escalator clauses, with an average unexpired term of five years. The average price of gas under these contracts last year was about 6½ cents per MCF. Construction costs in this area are comparatively low, since no coal-handling equipment is needed; and transmission lines require no clearing of right of way.

The company's policy is to finance its construction requirements for one year at a time, paying the going rate for funds. Financing of construction requirements for the current fiscal year ending August 31st (about $13,000,000) has been completed but further financing is in prospect. A balanced capital structure is maintained, and the common stock equity is held at not less than 25 per cent (except as it may drop below this figure temporarily). The common shares were split 8 for 5 in April, 1947. Subscription rights were given on a 1-for-10 basis in February, 1947, and on a 1-for-11 basis in January, 1948. Stockholders were allowed to subscribe for stock in excess of their preëmptive rights (subject to allotment) which was helpful in making the offerings successful.

In the twelve months ended April 30, 1948, share earnings were $2.54 and, in line with the general policy of paying out two-thirds of earnings regardless of construction needs, the rate was raised June 1st to $1.80 (compared with $1.60 theretofore). As a reflection of the company's growth and its ability to control operating expenses, nearly 23 per cent of operating revenues is carried down to the balance for the common stock, com-

pared with only 6½ per cent for Consolidated Edison, 9.2 per cent for Consolidated Gas of Baltimore and Pacific Gas, 10.4 per cent for Detroit Edison, 12 per cent for Boston Edison, 12.3 per cent for Commonwealth Edison, etc.

LAWRENCE COOPER, of Argus Research Corporation, has issued a brief analysis of *Electric Bond and Share*. Instead of following the usual method of estimating ultimate work-out values for the various EBS holdings, he thinks that it is less complicated and just as accurate to use 1946-8 price ranges for these investments, plus estimated values for the securities to be received under the American & Foreign Power plan. At recent prices, the share value works out at $22 per share; at the 1946-8 highs it would be $32.60, and at the lows $14. Of course, as Mr. Cooper points out, holding company stocks in liquidation usually sell at a discount; and since EBS may only partially liquidate its holdings (continuing as an investment company) it is safer to mark these values down by 25 per cent. The corresponding figures on this basis would be $16.60, $24.45, and $10.50.

H. Hentz & Co. has also prepared a brief analysis of *Electric Bond and Share* and arrives at an estimated break-up figure of $26 per share. It makes the interesting suggestion that along with the purchase of every 100 shares of EBS, some 24 "stubs" of EBS $4.20 preferred stock be purchased at 2½ in the over-the-counter market. If the preferred stockholders should win their claim against the company, the 24 stubs would show a profit of $180, though the common shares would suffer a reduced claim of the same amount. If the preferred stockholders fail to establish their claim, the total loss for the entire commitment is only $60 (60 cents per share on EBS common). Hentz & Co. thinks that the reorganization plans of the subholding companies should be consummated within a year or so, with Electric Power & Light probably the first to be completed.

Bache & Co. has issued a 2-page bulletin on "The More Favorable Outlook for Utilities," pointing out that under a Republican administration there might be less pressure to expand the tax-free operations of TVA and other Federal power projects; and that state commissions might give greater consideration to rising costs in regulating rates. Estimated liquidating values for holding company securities were tabulated, and a list of selected operating companies, attractive for generous return and long-term growth prospects, was included.

W. TRUSLOW HYDE of Josephthal & Co. has issued an analysis of *Niagara Hudson Power*. He comments favorably on the proposed provision in the new recapitalization plan whereby the company would use dividend income to retire securities, because (1) this would avoid distribution of a large amount of stock of the new merged operating company at any one time, thus lessening the market pressure which might result from a single distribution; (2) it would enable stockholders to obtain the long-term benefits of retiring senior securities out of earnings, ultimately receiving a stock currently worth twice the present market price of Niagara Hudson and paying a dividend equal to $1.20 a share; and (3) additional long-term benefits should be realized from normal growth of Buffalo Niagara Electric and a probable increase in the dividend rate.

Earnings on the new stock might well increase to around $2 a share, justifying a dividend rate of $1.50 and a market value of 25 to 30, according to Mr. Hyde. On this basis the dividends would approximate 15 per cent of the recent market price and the stock might sell at 2½ times the current level. While these full benefits might not be fully realized for a period of about seven years, Mr. Hyde thinks that the proposed plan can be largely effectuated over the next six to twelve months, which might eliminate the market discount from the estimated present liquidating value of 11-12½. Moreover, he believes that during this period the market for utility stocks will show

considerable improvement so that even the short-term appreciation in market value might amount to 50 per cent to 60 per cent over present price.

GOODBODY & Co. a few weeks ago issued a 3-page memo on *Arkansas Natural Gas,* in which stock there has been increased market interest this year. The company is a subholding company in the Cities Service system, controlling natural gas distribution and transportation properties through Arkansas-Louisiana Gas Company, while the remaining subsidiaries (Arkansas Fuel Oil and its two subsidiaries) are engaged in the petroleum industry. Under the Holding Company Act Arkansas Natural Gas must dispose of the distributing properties owned by Arkansas-Louisiana Gas.

Goodbody understands that "plans have been formulated to transfer to a new company all nondedicated gas reserves (those not already earmarked under contract) and production owned by Arkansas-Louisiana Gas, while a second new company might be formed to hold the natural gas pipe-line properties and dedicated gas acreage (acreage under contract) owned by the same company." The top companies' remaining properties would then be sold either through negotiated sale or competitive bidding, with proceeds estimated around $15,000,000. Goodbody considers it unlikely that Cities Service will merge with Arkansas Natural Gas, which would involve retiring the preferred stock and offering the common stock cash or an exchange of stock; it thinks that the difference in price-earnings ratios would operate against this. Arkansas Natural Gas is worth more for its reserves than its current earning power; these reserves are estimated by Goodbody at around $15-$16.50 per combined share of A and common stock; the value of other assets would, it thinks, more than offset the outstanding preferred stock. While Arkansas Natural Gas is usually classed with the natural gas companies, about 82 per cent of 1947 gross was from oil operations and 18 per cent from natural gas. The firm thinks that earnings this year might approximate $1.25 per share.

EASTMAN, DILLON & Co. and First Boston Corp. issued, almost simultaneously, detailed analyses of *Central Arizona Light & Power.* First Boston Corp. describes it as a "utility operating company which enjoys rapid growth plus a long-term supply of natural gas at low prices." Operating revenues increased by 17 per cent in 1947 and 24 per cent in the first four months of 1948—much larger gains than for the industry. Successful negotiation of a 10-year contract with El Paso Natural Gas Company for a firm supply of natural gas fuel (effective January 6, 1948) gives the company protection against rising fuel costs, and the current installation of a new 30,000-kilowatt generating unit will provide further economies.

In 1947 the company had to buy large amounts of fuel oil at high prices, resulting in a sharp decline in earnings to only 72 cents against $1 in 1946. The radical change in fuel prices this year was reflected in a recovery to $1 per share in the twelve months ended April 30th, and an estimated $1.39 if the gas contract had been in effect for the entire period.

The Eastman, Dillon circular points out the excellent growth of the territory served, the advantage of the new fuel contract, and the probability of an increase in the dividend rate which is currently "only a modest proportion of earnings."

FIRST BOSTON CORP. has issued a 7-page analysis of *Oklahoma Gas & Electric Company* common stock. Despite the name, operations are entirely electric, the company has an unbroken dividend record of forty years, and considerable progress has been made in the last decade in reducing interest and preferred dividend requirements. It is controlled by Standard Gas & Electric, but 140,000 shares were sold to the public in March, 1947, to obtain construction funds. The common stock equity is being improved through various amortization charges. Earnings provide a good margin above the $2.20 annual dividend rate, and further gains are indicated.

RECENT FINANCIAL DATA ON GAS COMPANY STOCKS

		7/8/48 Price	Yield	Earned	P-E Ratio
Natural Gas—Retail					
C	Arkansas Natural Gas (80¢-E)	8	10.0%	$0.80-d	10.0
O	Atlanta Gas Light ($1.20)	18	6.7	2.07-m	8.7
S	Columbia Gas System (75¢)	14	5.4	1.32-m	10.6
C	Consol. Gas Util. (50¢)	11	4.5	1.53-ap	7.2
S	Consol. Natural Gas ($2)	46	4.3	4.58-m	10.0
O	Houston Natural Gas (80¢)	17	4.7	1.29-ju	13.2
O	Indiana Gas & Water ($1.20)	18	6.7	1.59-my	11.3
O	Kansas-Neb. Nat. Gas ($1–)	17	5.0	1.68-d	10.1
C	Lone Star Gas ($1)	23	4.3	2.15-m	10.7
O	Mission Oil ($2.10)	42	5.0	2.04-d	20.6
O	Mobile Gas Service ($1.50)	22	6.8	2.82-m	7.8
C	Montana-Dakota Util. (80¢)	12	6.7	1.46-m	8.2
C	National Fuel Gas (80¢)	12	6.7	0.80-m	15.0
C	Okla. Natural Gas ($2)	39	5.1	4.36-ap	8.9
S	Pacific Lighting ($3)	55	5.5	5.17-m	10.6
C	Pacific Pub. Serv. (80¢)	15	5.3	2.43-d	6.2
C	Rio Grande Valley Gas (5¢)	2¼	2.0	0.21-d	11.9
O	Rockland Gas ($1.70)	24	7.1	3.36-d	7.1
O	Southern Union Gas (70¢)	20	3.5	1.20-d	16.7
O	Southwest Nat. Gas (20¢)	4	5.0	0.28-m	14.3
O	Texas Public Service ($1.20 and stk.)	23	5.2	2.59-my	8.9
C	United Gas ($1)	20	5.0	1.66-m	12.0
S	Washington Gas Light ($1.50)	26	5.8	2.98-ap	8.7
	Averages		5.3%		10.8
Mixed Gas—Retail					
S	Laclede Gas Light (20¢)	6	3.3%	$0.96-m	6.3
O	Minneapolis Gas Light	12 wd	..	1.02-d	11.8
O	National Gas & Elec. (60¢)	9	6.7	1.64-d	5.5
S	Peoples Gas L. & C. ($5)	93	5.4	10.35-d	9.0
	Averages		5.1%		8.2
Natural Gas—Wholesale & Pipe Line					
S	El Paso Nat. Gas ($2.40)	67	3.6%	$6.02-ap	11.1
O	Interstate Nat. Gas ($1.75)	26	6.7	1.71-d	15.2
O	Missouri-Kansas P. L. ($1)	27	3.7	1.27-d	21.3
S	Northern Nat. Gas ($1.60)	34	4.7	2.96-m	11.5
S	Panhandle Eastern P. L. ($3)	62	4.8	4.55-m	13.6
S	Southern Nat. Gas ($1.50)	28	5.4	2.86-m	9.8
O	Southern Production	13		0.31-m	
O	Tenn. Gas & Trans. ($1.40)	29	4.8	2.28-m	12.7
O	Texas Gas Transmission	11		1.02-ap	10.8
O	Texas East. Transmission	13½			
	Averages		4.8%		13.3
Manufactured Gas—Retail					
O	Birmingham Gas (60¢)	10½	5.7%	$1.71-m	6.1
C	Bridgeport Gas ($1.40)	23	6.1	1.69-d	13.6
O	Brockton Gas Lt. ($1)	12	8.3	1.00-d	12.0
S	Brooklyn Union Gas	20		Def.	
O	Hartford Gas ($2)	34	5.9	2.10-d	16.2
O	Haverhill Gas Lt. ($1.60)	18	8.9	1.45-my	12.4
O	Jacksonville Gas ($1.40)	29	4.8	5.64-d	5.1
	Averages		6.6%		10.9

RECENT FINANCIAL DATA ON TELEPHONE, TRANSIT, AND WATER COMPANIES

		7/8/48 Price	Yield	Earned	P-E Ratio
	Telephone Companies				
	Bell System				
S	American Tel. & Tel. ($9)	$155	5.8%	$7.50-m	20.7
O	Cinn. & Sub. Bell Tel. ($4.50)	75	6.0	3.85-d	19.5
C	Mountain States T. & T. ($6)	114	5.3	3.60-m	31.7
C	New England Tel. ($5)	93	5.4	4.38-m	21.2
S	Pacific Tel. & Tel. ($6)	100	6.0	4.35-my	23.0
O	So. New England Tel. ($6)	122	4.9	3.76-d	32.4
	Averages		5.6%		24.8
	Independents				
C	Associated Tel. & Tel. A	11	..	Def.	..
S	General Telephone ($2)	26	7.7	$2.11-m	12.3
C	Peninsular Tel. ($2.50)	46	5.4	6.40-d	7.2
O	Rochester Telephone	9	..	.47-d	19.1
	Transit Companies				
O	Baltimore Transit	3	..	Def.	..
O	Capital Transit	15	..	Def.	..
O	Chic. S.S. & S.B. ($1)	8	12.5	$1.38-d	5.8
O	Cinn. St. Ry.	6	..	1.57-d	3.8
O	Dallas Ry. & Term. ($1.40)	12	11.7	3.39-d	3.5
O	Duluth Sup. Tran. ($1)	10	10.0	2.75-d	3.6
O	Kansas City Pub. Ser.	1½	..	Def.	..
O	Los Angeles Transit (50¢)	6	8.3	.87-d	6.9
S	National City Lines (50¢)	7	7.1	1.57-d	4.5
O	Phila. Transit (30¢)	4	7.5	Def.	..
O	Rochester Transit	6½	..	Def.	..
O	St. Louis Pub. Serv. A (50¢)	6	8.3	.37-d	16.2
O	Syracuse Transit ($3)	23	13.0	3.52-d	6.5
S	Third Av. Transit	11	..	Def.	..
S	Twin City Rapid Tr.	7	..	.62-d	11.3
O	United Transit	4	..	.21-d	19.0
	Averages		9.2%		8.1
	Water Companies				
O	Elizabethtown Water ($6)	121	5.0%	$8.81-d*	13.7
O	Federal Water & Gas ($1.80)	32	5.6	3.13-d	10.2
S	Hackensack Water ($1.70)	33	5.2	3.08-d	10.7
O	Indianapolis Water A (80¢)	17	4.7	1.19-d	14.3
O	Middlesex Water ($3)	62	4.8	5.71-d	10.9
O	New Haven Water ($3)	59	5.1	3.34-d	17.7
O	Northeastern Water	14	..	.38-m	..
O	Phila. & Sub. Water (80¢)	20	4.0	2.63-d*	7.6
O	Plainfield Union Water ($4)	75	5.3	4.74-d	15.8
O	Stamford Water ($1.80)	53	3.4	2.27-d	23.3
	Averages		4.8%		13.8
	Water Companies—1946-7 Issues				
S	Amer. Water Works (60¢)	8	7.5%	$0.82-m	9.8
O	California Water Ser. ($2)	30	6.7	2.49-my	12.0
O	Ohio Water Serv. ($1.50)	20	7.5	2.19-m	9.1
O	San Jose Water ($2)	34	5.9	2.62-my	13.0
O	Scranton-Spring Brook (70¢)	11	6.4	.85-m	12.9
O	West Virginia Water Serv. ($1)	15	6.7	1.48-ap	10.1
	Averages		6.8%		11.2

Def.—Deficit. wd—When distributed. E—Estimated. C—Curb Exchange. O—Over-counter or out-of-town exchange. S—New York Stock Exchange. d*—December, 1946. Ju—July; d—December, 1947; m—March, ap—April, my—May, 1948.

What Others Think

Ideal Administrators

"EVERY day it is becoming increasingly clear that we are engaged in a war of ideas; a war of ideals. Democracy and totalitarianism are the adversaries. The stakes are high." These introductory sentences were uttered by Donald K. David, dean of the Harvard Business School, at a forum with the National Association of Magazine Publishers, April 27th. The subject of Dean David's remarks to the group was "Business Leadership and the War of Ideas." Before revealing his concrete suggestions on the subject he said:

> To my mind, the way to make our system work better is perfectly clear. You cannot improve the system by superimposing all-pervasive planning at the top; that does not improve the system—it changes it. The way to do it is to improve the quality of the decisions all along the line. Let them be made where they are now; but improve their quality.
>
> Since businessmen make a larger number of those decisions and since I happen to be occupied in trying to develop ways of improving those decisions through education, let us look at the businessman's part in this process. What would the ideal businessman look like? What kind of a person could meet the task I have outlined for him?

DEAN David then discussed his concept of five qualifications of an ideal businessman. He would be a very capable individual. The five qualifications are enumerated below, together with a condensation of the dean's discussion under each point. This businessman would:

(1) *Have the ability to work effectively with people.* This is perhaps the most important and necessary characteristic. This means he must select people carefully, so organize their jobs that they can operate as a team, and acquaint them with the purposes and policies of the organization so that they will have a willingness, even a zest to work.

(2) *Have the ability to make decisions.* This doesn't mean that an executive can afford to make snap decisions. Rather it means that he must develop the art of making sound decisions quickly in the light of facts available and under the pressure of time. A competent administrator must assemble the facts involved, evaluate and weigh them, visualize alternative courses of action, and reach a seasoned conclusion. Then act.

(3) *Accept responsibility instinctively.* The businessman is the main source of initiative in our economy and his position is one of unusual influence. His responsibilities are correspondingly great. These should be not only toward his company and industry, but also toward the community, the nation, and even the world.

(4) *Understand the basic forces at work in our society.* This involves recognizing the weaknesses and deficiencies in our system. It means that he tries to understand the economic, social, and political forces which shape the environment within which he operates. He will strive continually toward improvement in the social and economic structure itself.

(5) *Clearly understand his objective* of furnishing both material and other human satisfactions. He must be a maker of jobs and therefore a maker of profits. The long-term view is best. All interests must be considered—employees, stockholders, suppliers, customers, and all others directly affected. The other human satisfactions are intangible and spiritual. Helping men to find the kind of activity for which they are best suited intellectually and emotionally is important in this respect. Continued educational efforts with men as they develop

in an organization is another important point.

In concluding his remarks, Dean David said he was happy in knowing that this country is developing a growing group of business managers who recognize the responsibility of business leadership and who are devoting funds and effort to study how best to meet the responsibilities.

Spurr on Aid to Communities

COMMUNITY relations and community coöperation rank very high as necessary policies for public utility executives. A. C. Spurr, president of the Monongahela Power Company, Fairmont, West Virginia, has made a special study of such policies and is applying the resulting ideas in his company's territory. At the recent annual convention of the Edison Electric Institute at Atlantic City he discussed the subject in an address entitled "The Utilities and the Community."

Mr. Spurr and his associates sent out a letter and questionnaire to about 150 other companies to determine what they were doing about community relations and community coöperation. Approximately two-thirds of the companies responded to the questionnaire.

Practically all of those answering said they do maintain a direct and intimate relationship with community organizations. Most of them belong to the chamber of commerce and the civic clubs; they support the churches and schools and the social and welfare groups.

Only 29 companies, however, answered that they had departments dealing exclusively with area development. Also, in answer to the question, "Do you have a prepared program covering policy, activity, and job responsibility?" the replies were a bit discouraging to Mr. Spurr. Only 17 companies had defined policies of community development; 20 had programs of activity to be followed; and 19 had prepared statements of the responsibility of those engaged in development activities.

ON the other hand, the survey produced encouraging information regarding the details of various excellent programs now in effect in different parts of the country. One company had a long-range program aimed at industry, agriculture, and tourist trade, strictly at the community level. Another had done an effective job in development of home-grown products, through chemurgy. A great deal of good work is being done on promotion of rural electrification.

With respect to the program of his own company, Mr. Spurr said:

> We're trying everything in the development book—agriculture, industry, housing, recreation, conservation, forestry. We have people out in the field who talk to the farmer on a grass-roots basis. Our meter readers in the urban areas are taught to talk to the housewife about her service problems. He carries the tools to make minor appliance repairs, and if Mrs. Housewife shows an inclination to talk about a new home or a community program he knows where she can get the information she may need on those subjects if he doesn't know the answer himself.
>
> The public, even the part that likes us, still is suspicious of bigness in business and industry, and for that reason it is best to let the people of a community do their part of development activities and feel they are doing it their own way. Of course, where there is real community leadership to do a job, then by all means it should be encouraged. It has been our custom to get the newspaper people together first, review with them the particular problems arising, propose our answer, invite their opinions and criticisms. Then we may proceed, assured of their interest and support. I can't emphasize too strongly confiding in and working with the newspapers. If they are sold, it assures the success of your program, and strangely enough produces good publicity for the company.

A cardinal principle of Mr. Spurr's is that working for the communities is good business because the utilities cannot prosper unless their communities and customers prosper first.

"I'M SURE YOU'LL HAVE TO TOW ME IN, GUS—IT'S REALLY GONE DEAD!"

Pattern for Gas Nationalization in Britain

THE blueprint for nationalization of the gas industry in Britain is drawn. The British Information Services in this country has outlined the situation for the information of people in the United States. Following is a digest of the material distributed here:

The government's gas bill was presented to Parliament on January 22, 1948. Its purpose is to provide for the organization on a regional basis, under public ownership, of Great Britain's gas industry.

Twelve area boards, each consisting of seven to nine members, are to be established, covering the whole country. Their duties will be to develop and maintain a gas supply system and coke production in their areas.

In carrying out large capital development and reorganization, each area board is to act in accordance with a general program settled with the Minister's approval.

A council, to be known as the Gas Council, is to be established. Its duties are to be largely advisory and financial, but it does have the power in conjunction with area boards to manufacture plant and gas appliances, except for export.

The area boards are to acquire all of the assets and liabilities of all gas com-

panies, organizations, and units engaged in the gas business. The holders of gas company securities, the whole of whose assets are to be transferred by the bill, are to be compensated by the issue to them by the Gas Council of British gas stock, the value of which is to be determined by the treasury.

COMPANIES and joint boards, the whole of whose assets and liabilities are to be transferred under the bill, are to be dissolved on the vesting date and "stockholders' representatives" are to be appointed to represent their interests in the determination of compensation and payment of final dividends.

Local authorities (municipal) are to receive payments from the area boards sufficient to cover the interest and sinking-fund charges on the outstanding debt of their gas undertakings and a share of a fixed sum ($8,000,000) allocated for distribution as additional compensation for the severance of the gas undertakings from the other activities of the authorities.

The British gas stock to be issued in compensation is to be guaranteed by the treasury. The Gas Council is also to be empowered to create and issue British gas stock for the purpose of borrowing money for capital purposes and the council and the area boards are to be enabled to raise temporary loans. This stock and any temporary loan may also be guaranteed by the treasury.

Each area board must establish and maintain a general reserve fund which can only be used for its own purposes. The Gas Council is required to establish and maintain a central guaranty fund, not exceeding $20,000,000 to which area boards are to contribute.

For the purpose of determining any question or dispute under the provisions of the act, a gas arbitration tribunal is to be set up by the Lord Chancellor, consisting of one person of legal experience in business and the other in finance.

New Capital for Independent Telephone Companies

PROBLEMS faced by independent telephone companies in obtaining new capital were discussed by P. P. Stathas in an address before the annual convention of the New York State Telephone Association held at Rochester in May. Mr. Stathas is senior partner of the firm Duff & Phelps, engineering and financial consultants.

The independents, and particularly the smaller ones, can raise their additional funds more readily and probably on a lower over-all money cost through negotiated deals with lending institutions rather than through public offerings or competitive bidding, he said.

However, insurance companies and other lending institutions require detailed information when considering the purchase of proposed securities or the extending of bank credit. Mr. Stathas discussed in considerable detail the types of information required by such groups. Following is a check list of twelve items of information which cover the main points:

1. Detailed facts as to the economic stability and the principal income support of the population of the territory served.
2. A tabulation of the number of company-owned stations over a considerable period in the past.
3. Information concerning principal property items, giving age, type, condition, and amounts.
4. Complete balance sheet information with breakdowns of important plant account items, additions, and retirements.
5. Description of all securities which are to rank ahead of or on a parity with the new security.
6. Comparative income statements

in detail as far back as possible.

7. Complete schedule of existing rates and comparisons with those of near-by communities.

8. Thorough outline of the company's depreciation policy.

9. A forecast of the balance sheet and earnings statements, taking into consideration the new financing and its probable effects.

10. A similar forecast for cash showing the margin which may be reasonably expected for payment of interest and dividends.

11. A statement as to the educational and experience background of the key executives and personnel.

12. Definite proof of good employee and public relations.

Some companies will have to sell additional stock in order to keep their capital structure in balance. Mr. Stathas says that these stocks will have to be marketed to present stockholders or to other individuals since the institutional market is very limited, if not entirely nonexistent, for securities of this type under present conditions. "The sale of these stocks to individuals can be accomplished, but it will require rather generous commissions to the underwriters or salesmen," he added.

Simple Economics

THE American Economic Foundation, New York city, was founded in 1939 with the stated purpose of locating the causes of, and finding the remedies for, the friction between economic groups. One of its main purposes is to aid business to defend itself against unwarranted attacks.

During 1947 it published 17 books and booklets written in laymen's language. For 1948 an equally extensive program is in progress. The titles of the publications are catchy. Here are three: "How We Live"; "Money"; and "Profits Is a Nasty Word."

One of the foundation's basic books is "How We Live." It was written by Fred G. Clark, general chairman, and Richard S. Rimanoczy, educational director. One of the main themes of the book is well told in the last paragraph:

> Just as those who call for the adoption of basic English as a cure for the diplomatic confusion of the world, the authors call for a set of unmistakable economic words as a cure for the economic confusion of the world.

One of the features of "How We Live" is an exposition of how corporation tools come into being. It is on one printed page and is reproduced here as an example of the type of presentation given to various economic concepts.

"Corporation" is the legal name for a group of persons owning the tools of production used in a given business undertaking.

These tools are supplied by persons who want to add to the amount they receive in payment for their labor and guard against the time when they cannot work.

In order to do this they are willing to "save," that is, deny themselves food, shelter, and comfort in order to become owners of tools. They join their "savings" together in a coöperative undertaking to bring together tools, natural resources, and labor, and produce goods and services whose nature, price, and quality will please the customer.

They do this by:

1. Buying corporation stocks and bonds, etc.

2. Paying premiums to life insurance companies (who in turn buy corporation stocks, bonds, etc.).

3. Putting payments into savings banks (which use them to buy bonds, mortgages, etc., of corporations and others).

Thus, the combined self-denial of hundreds of thousands of small investors can take the form of one large corporation.

The amount of tools in all of the 400,000 corporations existing in the United States today totals about $130 billion and their ownership is in the hands of all persons owning corporation stocks and bonds, life insurance policies, and savings accounts.

Estimates of the number of people thus owning corporation tools vary between 50,000,000 and 75,000,000: The number of workers using them to produce goods and services is between 20,000,000 and 25,000,000.

Mr. Clark contends that friction between economic groups can be largely

eliminated by a knowledge of "who gets how much for doing what." A point is made in the American Economic Foundation's publications to answer this question in as many different ways as possible and in the simplest of language.

Who Keeps Plugging the "Power Shortage"

ROBERT S. BYFIELD, prominent New York security analyst, whose provocative and well-written personal letter to his clients has often produced a thought-provoking challenge, recently raised the question about who or what was behind the continued publicity in the United States about the so-called power shortage. In his letter of June 11th, Mr. Byfield pointed out that self-styled liberals and American parlor pinks may be unwittingly doing the work of Communist fifth columnists. He states:

> The Communist fifth column in the United States is, of course, well aware of the value of false ideas in undermining American confidence in free enterprise. It is alert to exploit any weak points or possible weaknesses. Sometimes the party flat-footedly makes a public espousal of its viewpoint on a controversial matter; more often it operates through dummies or "front" organizations of which there are legion. There is fortunately a widening recognition of the mechanics of this procedure in the United States. Almost always the underlying facts are twisted and distorted with the aid of biased arithmetic.
>
> One illustration will suffice—the widely publicized allegation that a nation-wide power shortage exists. We are not aware that any reference was made to this in the Communist-controlled Soviet press or in the *Daily Worker*. Nevertheless, the electric power industry has been attacked on this point by left wingers all over the country, some of them in government service. Articles appeared in magazines on the subject, some of them quite dramatic in character and others obviously inspired articles in many newspapers. We wonder who is master-minding this sort of thing. Certain persons not in the remotest degree connected with leftist groups have for one reason or another found it to their interest to express their opinion on the subject of an electric power shortage. For example, a United States Senator based his approval of the St. Lawrence waterway project partly on the supposition that the Northeast was suffering from a power shortage. Pressed to cite specific instances he referred the undersigned to an article in *Fortune* magazine of January, 1948, and to the case of an REA co-op in Washington county, Vermont, which could no longer obtain power from the Green Mountain Power Company and by having to use Diesels caused 2,000 farm members to pay higher rates than they ordinarily would. . . . It is estimated that the growth of installed capacity will provide about an 8 per cent margin in December, 1948. Depending somewhat upon water conditions, matters should work out, particularly with the industry putting about 250,000 new kilowatts into service each month as it is now doing.
>
> Be that as it may, the "power shortage" like the "inadequate steel capacity" has been rendering yeoman propaganda service for the leftists. The situation should be recognized for what it is worth—it is more important ideologically than electrically. It is a rallying point for those who, for one reason or another, wish to magnify the faults or shortcomings of the private enterprise system. Arthur Koestler, the eminent novelist, who has contributed much to the Western World's awareness of the true nature of Communism, has recently stressed what he calls the "dirty hands" argument advanced by the proponents of Communism and left-wing radicals. This in essence is a party-line type of reasoning which says, "We, the democracies, must not attack the faults of Communism until we have corrected all of our own faults." If we adhere to this type of reasoning we must refrain from criticism of Soviet Russia because we can never reach a theoretically "pure" democratic system with no faults whatsoever. Applying this to the present tight situation in which the private electric power industry finds itself the inference is obvious—and a power shortage indicating a failure of the industry to perform satisfactorily is a practical illustration of what Koestler means by "dirty hands."

Of course, the fact that generating capacity in the United States exceeds many times that of the much larger and more populated Soviet Union and the fact that relatively few Russian citizens even have the opportunity for personal use of as much as a single kilowatt hour of electricity today is perhaps one of those items of "capitalistic propaganda" which some intelligentsia scorn as scarcely worthy of note.

The March of Events

In General

Private Enterprise Display

IN an impressive showing of the development of three of America's great hydroelectric enterprises by private capital, the seven business-managed companies which produce or purchase electric power generated on the Susquehanna river on July 1st and 2nd staged a 2-day tour for 44 newspapermen, magazine editors, and radio newsmen from Baltimore, Washington, New York, and Pennsylvania cities.

Editors and writers saw at firsthand the whole range of accomplishments in developing natural resources of the area for the service of a populous region rich both in industry and farming.

They saw the harnessing of a river three times within less than 40 miles; the reclamation from the river bed of coal which otherwise would be wasted but now used to generate electricity economically; the development of public recreation on man-made lakes behind the power dams; reforestation; the pooling of power; and the almost complete rural electrification of one of the nation's great farm areas.

A unique feature in this display by private enterprise of the work that it has been doing was that the companies involved are individual companies which, with one exception, have no corporate connection, but which have coöperated for many years in developing their service in their own local areas.

Sponsors of the tour were Consolidated Gas, Electric Light & Power Company of Baltimore, Maryland; Metropolitan Edison Company, Reading, Pennsylvania; Pennsylvania Power & Light Company, Allentown, Pennsylvania; Pennsylvania Water & Power Company, Baltimore; Philadelphia Electric Company, Philadelphia; Potomac Electric Power Company, Washington, D. C.; and Safe Harbor Water Power Corporation, Safe Harbor, Pennsylvania.

NSRB Appoints "Task Group"

THE National Security Resources Board on July 9th undertook a study of power problems affecting expansion of aluminum production in the United States.

Chairman Arthur M. Hill appointed a "task group" of electric power experts representing utilities and governmental agencies to report to the board on estimated future power needs of the aluminum industry and possible methods for meeting such needs.

In carrying on its work, the committee will schedule meetings with the aluminum producers and the staff of the NSRB.

Industry members of the new task group that will analyze the power situation are: J. J. Scholz, Commonwealth & Southern Corporation, Birmingham; Robert Brandt, New England Power Company, Boston; Walter Dreyer, Pacific Gas and Electric Company, San Francisco; V. M. Marquis, American Gas & Electric Service Corporation, New York; Charles M. Custer, Southwest Power Pool, Little Rock; E. S. Bundy, Buffalo Niagara Electric Corporation, Buffalo; J. E. Moore, Ebasco Services, Incorporated, New York.

Listed among the government members were the following: Edward Falck, NSRB; Francis L. Adams, Federal Power Commission; Barclay J. Sickler, Bonneville Power Administration; R. A.

Kampmeier, Tennessee Valley Authority; Ben Creim, Bureau of Reclamation; J. Warren McLaughlin, Munitions Board.

California

Seeks Additional Tax Money

CITY Attorney Everett M. Glenn was asked by the Sacramento city council early this month to make a study and recommendation as to what procedure the city should follow in a move to obtain additional natural gas franchise tax money from Pacific Gas and Electric.

Councilman Peter E. Mitchell requested that Glenn advise the council as to whether he considers the city has justifiable grounds to sue the PG&E for uncollected franchise taxes.

Mitchell said that under one interpretation of the terms of the franchise held by the PG&E in Sacramento for use of city streets for gas mains, the city may have been entitled to more than $100,000 since 1936 when the present franchise was executed.

City Manager Bartley W. Cavanaugh informed the council that representatives of the PG&E have offered to change the provisions of the franchise which would result in the city receiving approximately $21,000 annually instead of the approximate $11,000 paid under the existing franchise.

Delaware

Gas Rate Increase Approved

FOR the three months starting August 1st gas bills for customers of the Delaware Power & Light Company will show an increase of 3 cents per thousand cubic feet used, after the first 500 cubic feet, as compared with the bills for the three months just ended.

This was disclosed recently as the public utility commission approved the gas production cost report of the company which raised the cost per thousand cubic feet, after the first 500 cubic feet, 11 cents over the flat increase granted by the commission in November.

In a statement issued by the company following the commission meeting it was said "The effect of the increased cost of coal and oil upon the cost of making gas during the past twelve months was clearly indicated.

"The statement showed that the increased cost of making gas would, under the present rate schedule, require a production cost adjustment of 11 cents per thousand cubic feet — which is an increase of 3 cents per thousand to current gas bills."

The 3-month cost is the basis used for the adjustment under the agreement with the commission at the time a flat increase was granted last fall.

District of Columbia

Rate Increase Granted

A $2,750,000 increase in electric rates for the District of Columbia was authorized on July 8th by the public utilities commission. This will boost the average home owner's bill nearly 10 cents a week. Actually, monthly rates remained to be worked out, but would apply to meter reading on or after July 21st, payable on August billing.

The increase approved by the commission allows rates that will bring the Potomac Electric Power Company $2,750,000 more in revenue, on the basis of sales of electricity in 1947. Pepco had requested a $3,000,000 boost in rates.

The commission allowed the increase on the basis of past performance, in a decision reached within twenty-four hours after hearings ended. This amount, said the commission, "is necessary to maintain the company in a sound financial position and to provide it with the heretofore determined fair and reasonable return of 5½ per cent on its investment devoted to the furnishing of electric service."

During the hearings, both CIO and AFL representatives were among those who strongly opposed a rate boost.

Idaho

Rate Increase Broken Down

THE state public utilities commission early this month mailed to all newspapers in Idaho for publication a breakdown of an application by the Mountain States Telephone & Telegraph Company for increases in all classes of interstate phone service.

The commission said that the compilation was made "in order that the public may be fully informed of the proposed new increases."

The commission has set August 2nd for hearing on the company's application, filed on May 4, 1948.

The company said the proposed new rates would increase gross revenue by approximately $602,000 a year. Minus taxes, the company said, the increase will leave a net gain of about $361,000.

Iowa

Council Votes Fare Boost

THE Des Moines city council on July 7th unanimously approved an increase in streetcar and bus fares, effective July 11th.

The new rates will be 13 cents for a single ride or two tokens for 25 cents. The old rate was 10 cents. The weekly pass rate was increased from $1.50 to $1.75.

The ordinance granting the raise in fares stipulated that the company revamp its financial structure so interest of 5 per cent only can be paid on $4,821,000 first mortgage bonds and on car trust equipment notes. Some of the bonds have been paying 7 per cent.

The ordinance requires that the present 2½-cent fare for schoolchildren during the regular school year will continue.

Michigan

Discount Rate Cut

THE state public service commission on July 8th authorized the Detroit Edison Company temporarily to reduce its discount for prompt payment to 4 per cent, adding approximately $5,000,000 to customers' bills annually.

Effective immediately, the order permitted the new discount rate until the commission rules on the company's application for a permanent 3 per cent discount.

The company will net just over $3,000,000 in additional revenue after taxes, it was said.

Missouri

Agree to Wholesale Natural Gas Rate Cut

A COMPROMISE agreement on reduction of wholesale rates for natural gas sold for distribution in metropolitan St. Louis and elsewhere, estimated to amount to $1,250,000 a year in the aggregate, was announced recently by Mississippi River Fuel Corporation.

Laclede Gas Light Company, serving St. Louis and St. Louis county, will pass the reduction on to its 293,000 customers. The cut is expected to lower monthly gas bills by less than 20 cents each, on the average.

Refunds covering the difference in rates for the last two and a half years will be made to Laclede's customers. Their amount had not been calculated, but they were expected to average somewhat more than $5 each.

Formal approval of the compromise remained to be given by the Federal Power Commission.

Nebraska

Hydros to Act As Outlets

THE question of who will be the marketing agency for Bureau of Reclamation power in Nebraska was recently settled at a meeting of the Nebraska REA Managers Association at Ogallala.

The association's solution is that the Nebraska public power systems be the marketing agency for reclamation power in that part of the state served by the hydros, provided they will establish uniform rates in the area.

Settlement of the question will permit the Reclamation Bureau to proceed with plans to build a high-voltage line from Sterling, Colorado, to North Platte. It would be completed in 1951.

In 1954, a line would be built from the Fort Randall, South Dakota, generating plant, a part of the Missouri basin development plan, to cross western Nebraska and connect with the Nebraska system. This and three other resolutions were unanimously adopted by the executive committee of the Nebraska State Association of REA Projects, headed by B. Russell Anderson, Ogallala, state REA president. The other resolutions adopted were:

That the executive committee of the REA employ an engineer to study the composite needs of rural electrification projects in the state served by the public power system as a basis for negotiating for power.

That the committee does not agree to any temporary increases in rates by the Nebraska public power systems.

That the Nebraska public power systems be designated as the prime generators and distributors of wholesale power in their operating area and construct all transmission lines above 34.5 kilowatts.

Ohio

Power Shortage Due

DEMAND for electric power has swelled to the point where there may not be enough to go around in Cleveland this winter if everyone insists on using it at the same time. The Cleveland Electric Illuminating Company, after months of study, said the supply situation would not cause any actual hardship.

Large industrial and commercial

users will be asked, however, to spread their consumption over longer periods so as to reduce peak demands on the CEI. In this process of adjustment it was considered probable that there would be some "inconvenience" to wage earners and plant operations.

Although CEI officials were confident they could cope with the problem, they made no attempt to minimize it.

CEI President Elmer L. Lindseth revealed that beginning July 1st letters would be delivered to 350 large light and power users served by the company, asking their coöperation in maintaining full operations all around.

Pennsylvania

Light Vote Deserts Strike Boss

GEORGE L. MUELLER, the labor leader who twice tried to plunge Pittsburgh into darkness, is virtually a man without a union. He recently lost the second round of his fight to take his independent union into the ranks of the CIO Utility Workers.

All but two of the smaller units which his union had represented voted to affiliate with the AFL International Brotherhood of Electrical Workers. They repeated the results of an earlier National Labor Relations Board election in which the AFL snapped the backbone of the independent union by winning control of the people who make the power.

Mr. Mueller today is president of less than 350 of his original 3,500 members.

Texas

Utility Requests Power Conservation

THE Dallas Power & Light Company recently called on large commercial and industrial users of electric power to limit consumption to essential needs. The company said this summer's demand for power would tax facilities to their limit.

C. A. Tatum, commercial manager, said the company expects to carry the load, barring a major breakdown of generating equipment. But he urged that the big consumers make the most efficient use possible of their electric service to reduce chances for such a breakdown.

"One of the best ways consumers can help," he said, "is to turn the power off when electrical equipment is not in use."

The demand for electricity set a new record during June, when 22 per cent more power was used than during June, 1947, he added.

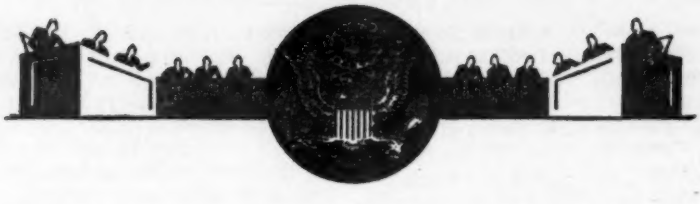
Wisconsin

Jurisdiction Challenged

THE jurisdiction of the state's utility antistrike law over clerical employees was challenged by the Wisconsin Telephone Company on July 8th in a petition to the state employment relations board. The company asked that the board dismiss the action by the Wisconsin Clerical Union (independent), invoking the antistrike law.

Acting on the union's petition, the board early last month appointed Thomas P. Whelan, Marquette University professor, as conciliator in the dispute. The union stated that negotiations with the utility were deadlocked.

In its petition, the company contended that the dispute does not endanger its operations and consequently would not be subject to the law.



Progress of Regulation

Commission May Fix Temporary Rates Pending Appeal from Ordinance

THE supreme court of Ohio holds that the commission has power to fix interim rates to prevent injury to the public or a utility pending the determination of an appeal from a rate ordinance if there is no contract between the city and the utility company.

An Ohio law gives the commission power, in case of an emergency, to make temporary changes in rates. The city of Cincinnati, however, challenged an emergency rate order because of another provision limiting the scope of the Public Utilities Act when rates are fixed by a municipality granting permission to use streets.

The commission and the company pointed out that the restrictive law was without significance where there was no ordinance or ordinance contract in force, as was presently the case between the city and the company. While the rates charged were the same as those established by an ordinance which expired in June, 1944, the rates did not actually exist as ordinance rates.

The court decided that the commission was prohibited from exercising jurisdiction where there is a valid and operative ordinance under which a utility is furnishing its products or services to users within a city, but that where a utility has appealed to the commission from a rate ordinance unacceptable to the utility the rates prescribed by that ordinance are suspended or abated.

Where the utility then elects to charge the rate which previously existed, it is not charging a rate fixed by any subsisting ordinance, but one which is ordained by statute pending the outcome of the appeal.

In such circumstances the commission would have jurisdiction.

The court also decided that there exists a "rate" within the meaning of the law. When the company declined to accept new rates fixed by new ordinances and appealed to the commission, electing to charge the former rates, the rates so charged became the existing legal rates.

This decision, as pointed out by the court, reverses the position taken in City of Cleveland *v.* Public Utilities Commission (1932) 126 Ohio St 91, PUR 1933E 73. *City of Cincinnati v. Public Utilities Commission of Ohio (No. 31302).*

Restriction of Gas for Space Heating Modified and Continued

ALTHOUGH civic groups and others sought a general modification or termination of restrictions on gas for space heating in the city of Syracuse, the New York commission decided, because of shortages, restrictions should be continued.

The commission, however, approved a

provision that prohibitions against service to new customers for space heating should not apply where, because of special or unusual conditions or circumstances applicable to an individual occupant of premises, the failure to receive gas for space heating would endanger life or result in serious impairment of health.

Those opposing the restrictions showed that gas-fired units could be installed more cheaply than coal-fired units or oil burners. There was testimony that the cost of gas-fired heating units is approximately $150 to $200 less per family unit than coal-fired furnaces. It appeared that the selling price of a small single family home could be reduced by about $500 if gas-heating equipment were installed in place of a coal furnace.

Stress was laid upon the high cost of new housing for veterans and others who cannot afford to pay the present high prices for property even with government assistance. The company, however, directed attention to the fact that a clause in the company's wholesale supply contract requires it to curtail gas to industrial customers in case of shortage in supply.

It was said that if, as a result of taking on additional house-heating customers, it became necessary to shut off service to industrial customers, such action might result in widespread unemployment which would be reflected in the loss of wages and might have a severe effect economically on those employed in industry, including veterans of the late war. Possibly such adverse effect would amount to more than the possible savings in the building of the dwelling for gas heating as proposed.

The commission said it was obvious that it must consider the problem of the conservation of natural gas supply upon a statewide basis. There has been a general shortage of natural gas in New York and throughout the Appalachian area. Only a small portion of the supply (approximately 20 per cent) comes from wells within the state. The greater part comes from southern fields and is delivered to distributing companies whose supply is limited.

The commission concluded that no relaxation of existing filed restrictions could safely be made if service to existing customers were to be protected. The commission could not gamble with the health and welfare of existing customers by speculating as to whether the winter season of 1948-1949 may be mild and have few zero degree days. *Re Supply of Gas (Central New York Power Corp.) (Case 13637).*

Electric Rate for Street Lighting Established

THE city of Pittsburgh filed a complaint against the Duquesne Light Company requesting the Pennsylvania commission to fix reasonable rates for electric energy for street lighting. This service was to be supplied under conditions constituting a new classification of service. The city, in its effort to reduce its cost for street lighting and to acquire an entirely new street-lighting system, sought to discontinue taking a "package rate" service covering energy, equipment, and maintenance, and to replace it with separate contracts for these separate elements.

The commission held that it has jurisdiction to prescribe proper service classifications to break down a combination "package rate" and to order the utility to break down an existing rate into its several component parts. The city and the utility company were preparing to enter into a contract for the street-lighting service and had agreed upon everything except the rate.

Consequently, the city started this proceeding to have the commission fix a rate. The commission said:

> The complainant has made extensive plans and preparations by advertising, receiving bids, and preparing for the letting of the three proposed contracts. It apparently has taken necessary action to implement the new street-lighting program. Respondent has offered to supply street-lighting energy as

requested by the city under its counter-proposals. Even if the respondent has made its offer to supply energy for street-lighting service, certainly a consumer should not be required by the law to enter into a contract and pay an exorbitant rate before he is allowed to test the reasonableness thereof. To expect the parties to engage in a devious route, before the commission can act in setting the proper rates, is unreasonable and untenable. Equity does not require that a vain thing be done. The commission in its administrative function seeks to do equity. It is obvious that the commission could and should logically impose a reasonable rate in the first instance.

Under the contract the city was seeking to acquire ownership and operating responsibility only for that part of the present street-lighting system which involves the lamps, fixtures, and directly associated facilities, including inspection and replacement. It did not seek to acquire a complete system comprised of the interconnecting circuits, poles, cable, conduit, and junction boxes, or other distribution circuits necessary to supply constant current energy from the utility's facilities.

Under the proposed contract the company would be required to determine the load and energy requirements of the street-lighting system by assessment of the individual lamp loads in so far as a demand determination was concerned. This value multiplied by the burning hours specified by the city would provide an approximation of the city's kilowatt-hour consumption. The commission believed this estimated basis was practicable if due allowances were made for certain circuit conditions. A system power factor of not less than 85 per cent was considered reasonable.

The city and the utility took opposite positions as to whether energy for street lighting constitutes an off-peak or on-peak load. The commission held that it should be considered as a base load, having necessity characteristics which occur within a narrow range of hours scheduled in advance with constant demand and energy requirements.

The commission ordered the company to establish an optional rate available to the city for street lighting where the city provides for lighting fixtures and associated facilities and rents the interconnecting circuits, conduits, cables, junction boxes, individual lamp transformers, etc. *Pittsburgh v. Duquesne Light Co. (Complaint Docket No. 14157).*

Express Rate Increase Based on High Railroad Costs Denied

AN express agency's application for authority to increase intrastate rates was denied by the Idaho commission. The application was based chiefly on the claim that additional revenues were needed so that the company might increase its privilege payments to railroads for services.

The commission rejected this basis for the rate increase when no measure of the railroad burden in handling intrastate express shipments was given. The commission felt that the record was entirely lacking in evidence supporting the express company's position.

A traffic test representing less than two-tenths of one per cent of the estimated total volume of express shipments was described by the commission as a "meager showing" and not in any sense a fair sample of the operations of the express agency. *Re Railway Express Agency, Inc. (Case No. F-1348, Order No. 1936).*

Adjustment Clauses and Penalty for Slow Payment Approved

THE Louisiana commission authorized an electric company to include in its schedules a provision that the net monthly bill is due and payable each month on presentation, and, if not paid within ten days from that time, there shall be an addition of 10 per cent to make the gross monthly bill.

The commission also authorized the inclusion, in the rate schedule for cotton gin service, of clauses for adjustments in billing in the event that (a) customer's power factor is less than 0.85 lagging, (b) the price of natural gas or its equivalent to applicant increases or decreases 5 mills or more per thousand cubic feet above or below a base price of 6 cents per thousand cubic feet, and (c) direct taxes or tax rates are increased after January 1, 1948.

There is nothing unusual, said the commission, about the presence of clauses in rate schedules providing for a penalty for nonpayment of bills. Even though the company chooses to use the term "gross and net billing," said the commission, it is in fact a penalty of 10 per cent imposed on those who are delinquent in paying their bill.

Likewise, the commission continued, there is nothing unusual about the presence of power factor, fuel, and tax clauses in industrial contracts for electric service. *Re Central Louisiana Electric Co., Inc. (Orders No. 4826, No. 4888).*

Commission May Modify Rate Contracts

THE North Penn Gas Company successfully applied to the Pennsylvania commission for the reformation of right-of-way contracts to bring contract rates in conformity with its filed tariffs. The contracts were made by the gas company with persons from whom it obtained rights of way for the construction and maintenance of gas lines. They provided for a cash payment by the company together with an agreement to serve premises at the rate of 10 cents per thousand cubic feet. This rate is lower than the existing filed tariffs of the company.

The contention was raised that the commission had no jurisdiction over the modification of the contracts because they were conveyances of an interest in land rather than contracts within the meaning of the Public Utility Law. It was also contended that the commission did not have jurisdiction because the conveyances were made prior to the enactment of the Public Utility Law. Finally, it was contended that there was no discrimination in the present rate to the contract holders because they furnished a valuable consideration to the company while other customers did not. These contentions were rejected.

The commission cited numerous cases upholding its jurisdiction over contracts. The fact that the agreements were made prior to the enactment of the Public Utility Law did not remove them beyond the commission's jurisdiction, it was held. *Re North Penn Gas Co. (Application Docket No. 70403).*

Commercial Classification Applies to Apartment House Business

THE Pennsylvania commission refused to change its opinion that a large apartment development consisting of a group of eleven buildings on a single plot of ground is such a business establishment as to qualify it under the word "commercial" appearing in a water company's schedules. The commission had held that the owner of the development was entitled to single point water service as a single customer unit, in Colonial Gardens Corp. *v.* Philadelphia Suburban Water Co. (1947) 71 PUR NS 497.

The company contended that the commission was inconsistent because it defined the word "commercial" to mean one thing in its classification of accounts and another thing in construing the company's rules. The commission pointed out that in the system of accounts the terms or items are precisely defined to express

their particular or special meanings for the purposes of the system of accounts only.

The accounting classifications are based upon the ultimate use of water, whereas the company's regulations as to customers entitled to single point service are based on the nature of the customer's business.

The common and accepted meaning of "commerce" according to the company, is the buying, selling, or exchanging of commodities or merchandise, or what is commonly called trade. But the commission referred to the Supreme Court's statement in Jordan *v.* Tashiro (1928) 278 US 123 that whatever the narrow or restricted meaning of the terms "commerce" or "commercial" may be, it is recognized that in a broad sense commerce embraces every phase of commercial and business activity and intercourse. The customer, said the commission, was engaged in business.

The commission had also decided that the customer was entitled to reparation because of the refusal of the company to grant a more favorable rate classification. Although the customer wrote to the company requesting a change in classification, he did not receive an answer to the letter.

It was not until later that the company refused the application, and the commission ruled that reparations should accumulate from the date of refusal. It said that, while the company in good conscience should have answered the letter, its failure to answer was in nowise tantamount to the refusal of an application submitted in proper form. *Colonial Gardens Corp. v. Philadelphia Suburban Water Co. (Complaint Docket No. 14138).*

Contributions of Telephone Plant Excluded From Rate Base

THE Wisconsin commission granted a telephone company's application for a rate increase after finding that existing rates were inadequate.

In its determination of a rate base the commission excluded contributions of telephone plant on the ground that a utility should not be permitted to earn on facilities which are contributed to it. It also excluded any allowance for cash working capital because current accruals for taxes provided sufficient cash for this purpose.

The rates approved would yield a return of 5.9 per cent on the adjusted rate base. The commission considered this return fair and reasonable. *Re La Crosse Teleph. Corp. (2-U-2613).*

Franchise Cannot Block Commission Rate Regulation

THE New York commission, according to a court ruling, has jurisdiction to regulate rates of a bus company operating in the city of Rochester, even though this company is the successor of a street railway company operating under a franchise restricting fares.

New York State Railways and its predecessors over a long period of years had operated under municipal franchises. In Quinby *v.* Public Service Commission, 223 NY 244, PUR1918D 30, the court of appeals held that this corporation was a street railroad corporation within the meaning of the Public Service Law, and the city at that time blocked commission action in raising fares.

In 1920 New York State Railways and the city executed a service-at-cost contract providing for various rates of fare based on operating expenses and other factors. This expired in 1930. In the meantime the company went into receivership.

Additional agreements purported to continue the service-at-cost contract, but these agreements were not submitted to the commission for approval. The court held in Rochester Transit Corp. *v.* Public Service Commission (1946) 271 App Div 406, 67 PUR NS 234, that the purported extensions of the contract were without effect.

With this background in mind, Justice Murray of the New York Supreme Court decided that the Rochester Transit Corporation, successor to New York State Railways, operating only busses and no streetcars, is an "omnibus corporation" and its fares are subject to control by the commission. He said that the law is clear that while cities may control conditions under which their streets shall be used for bus lines and make enforceable contracts in their franchise agreements, provisions of such contracts must yield, if inconsistent, to the exercise of the power of the state to fix rates of fare. *City of Rochester v. Public Service Commission et al.*

Gas Rate Increase Based upon Increased Cost of Service

A GAS company was authorized by the Massachusetts Department of Public Utilities to increase rates for domestic kitchen and space-heating service. This approval was based upon the increased cost to serve these customers and the limited earnings of the company. The commission said:

> The regulatory powers of this department are of limited scope. We have no control over labor, fuel, material, tax, and capital costs. These costs are governed in the first instance by the general economy of the district served by the utility and the country as a whole. The law of the land allows a fair return on the capital employed in the enterprise. We know of no magic formula with which a public utility can continue to absorb indefinitely increased operating costs without relief in the form of increased rates.

Re Dedham & Hyde Park Gas Co. (DPU 7805).

Commission Publication Is Not Subject To Review by Court

THE United States Court of Appeals for the District of Columbia held that no relief could be granted to the owner of a radio station objecting to statements made by the Federal Communications Commission outside of its official activities. The commission had published a report entitled "Public Service Responsibility of Broadcast Licensees," known as the "Blue Book."

Statements in the book, according to the owner of the radio station, tended to expose the owner to "public shame, obloquy, contumely, odium," etc., and tended to destroy the confidence of the public. The court took the position that, whatever might be the merits of these complaints, the Administrative Procedure Act does not provide judicial review for everything done by an administrative agency. It provides only for review of "agency action." The court decided that the publication involved was not the result of "agency action." *Hearst Radio, Inc. v. Federal Communications Commission, 167 F2d 225.*

Commission Order Refusing Discontinuance Of Agency Station Reversed

A RAILROAD'S appeal from an order of the Nebraska commission denying its application for authority to discontinue agency service was recently re-

versed by the Nebraska Supreme Court.

The record indicated that receipts at a small station in the grazing country had been inadequate to defray the expense of station maintenance and that at a near-by station the receipts had increased to such an extent that the railroad had voluntarily established an agency.

The court found that service at the new agency would be adequate, although somewhat less convenient than service at the station to be discontinued. It pointed out that it is not reasonable to require the maintenance of a full-time agency station when the cost of the service is out of proportion to the revenue derived from that portion of the public benefited by it. *Re Union Pacific Railroad Co. 31 NW2d 552.*

Other Important Rulings

THE Florida Supreme Court dismissed a petition to review a commission order granting a certificate of convenience and necessity to a passenger motor carrier, where the rival carrier making the petition failed to carry its burden of proving that the commission order was illegal or unauthorized. The supreme court pointed out that if a commission order is based on substantial and competent evidence and does not appear to be arbitrary or an abuse of discretion, the commission findings will not be set aside even though the court might have reached different conclusions on the same evidence as presented. *Pensacola Transit, Inc. et al. v. Douglass et al. 34 So2d 555.*

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Public Utilities Reports (New Series) **are published in five bound volumes annually, with an Annual Digest. These Reports contain the cases preprinted in the issues of PUBLIC UTILITIES FORTNIGHTLY, as well as additional cases and digests of cases. The volumes are $7.50 each; the Annual Digest $6.00.** ***Public Utilities Reports*** **also will subsequently contain in full or abstract form cases referred to in the foregoing pages of "Progress of Regulation."**

PUBLIC UTILITIES REPORTS

NEW YORK PUBLIC SERVICE COMMISSION

Re Charges by Utilities for Special Services*

June 2, 1948

INVESTIGATION *of question whether gas and electric companies may omit charges for special services from rate schedules; companies required to include such charges in schedules.*

Rates, § 234 — Schedules — Necessity — Charge for special services.

1. A public utility has no right to make a charge for special services without notice to the public in the rate schedule, p. 2.

Rates, § 77 — Powers of Commission — Charges for special services.

2. The Commission has jurisdiction over charges by gas and electric utilities for such special services as adjustment of burners on gas appliances, replacement of minor parts, and adjustment of gas and electric refrigerators and hot water heaters, p. 3.

Rates, § 234 — Schedules — Special charges.

3. Gas and electric utilities must include in rate schedules all rates and charges which are being made for each and every service rendered, except merchandise and jobbing, although services for which no special charges are being made need not be included, p. 4.

MALTBIE, Chairman: The question has been raised whether gas and electric companies may impose charges for services rendered in addition to the gas and electric energy supplied without including such charges generally or specifically in their rate schedules.

In many cases, utilities have performed special services for consumers, "work on consumers' premises," with-

*In any discussion of this subject, the provisions of Par 6 of § 65 of the Public Service Law should be kept in mind. In the following pages, it is nowhere intended to intimate that in any manner the provisions of that paragraph may be evaded or avoided.

out any charge and without any statement in the rate schedule that such services can be secured without charge. In other cases, utilities have included a statement in the rate schedule that such services are rendered by the utility without specific charge.

Recently, certain companies (and there may be other instances not brought to the attention of the Commission), seeking to obtain larger revenues, have adopted a schedule of charges for services which were formerly supplied without charge and these charges have not been included either generally or specifically in their rate schedules. The companies have merely advised applicants for such services that they no longer are to be supplied free of charge and that the charge for the service requested is a specified amount.

In other cases, where the utilities have included in the rate schedule a general statement that certain work on consumers' premises will be supplied free of charge, such provision in the rate schedule has been eliminated by an amendment to the rate schedule; and when applicants have requested service, they have been advised that a change has been made and they have been informed of the amount they are expected to pay.

[1] When queried as to the right of a utility to make a charge for special services without notice to the public in the rate schedule, the utilities have replied that they were not required to do so, that they were not obligated to render such services, that they have a right to establish any charge within reason for such services and that the fixation of a rate for gas or electric energy by the Public Service Commission when they made no such charges did not prevent them from establishing charges and thus increasing their revenues and income without the knowledge of the Commission.

This position is erroneous. If it is correct, it is obvious that the utilities have a new and unregulated source of income and that the fixation of a rate for gas or electricity may be avoided to a degree by the introduction of charges for specific services. Indeed, the purpose of the utilities in establishing these charges is sometimes to secure revenues in addition to those contemplated in a rate case decision.

It has been argued that a utility is under no obligation to render these special services, that it has done so merely as a convenience to the customer and that it can withhold such services thus throwing the work that has to be done for consumers into the hands of plumbers or others whose prices are not subject to any regulation except competition possibly. Possibly, there is as yet no obligation to render these services free or at a charge. But as a matter of fact the companies have included the expenses for furnishing such services in their operating expenses and have presented their claims as to rates on the basis of expenses with such items included, and rates for gas and electricity have been fixed to cover the reasonable cost of the special services which they have been rendering to consumers. If the position of the utilities is sound, the expenses of rendering such services must be eliminated from operating expenses considered in rate cases; if a charge is made, both the revenues and expenses in connection therewith must be eliminated, just as the revenues, expenses,

and all other costs for merchandising and jobbing are eliminated.

The reason suggested by utilities for the rendition of these services without specific charge is that by so doing their relations with their customers are improved, the inducement to utilize the gas and electric services of the utilities to the full is increased, the cost to consumers is kept low and an outside party is not brought in to complicate the utility's relations to its consumers. Generally, commissions have accepted this statement as justification for including the reasonable expense in determining rates.

[2] The argument that these special services are similar to the merchandise and jobbing business, which is not subject to regulation by this Commission, is not well-founded. We are not here considering charges for merchandise which a utility may install, rent, or sell; but rather the services furnished regardless of the ownership or installer of appliances. The work includes the adjustment of burners on gas appliances, replacement of minor parts, adjustment of gas and electric refrigerators and hot water heaters, etc. The utility in such cases makes no profit or gain as it may when it sells appliances, except through the good will of the consumer and continued or increased use of the gas or electricity.

It has been suggested that the Commission has no authority over such services and that a utility cannot be required to provide them. As to the latter, little time need be spent arguing the point. Generally speaking, progressive utilities have not taken the attitude that they are only furnishing gas or electricity and that they have no duty to render these special services. When the Commission encounters a utility which is so blind to its own interests that it will render no special services, the situation can then be dealt with. However, attention may be called to § 65 of the Public Service Law which requires every gas and electric corporation to "furnish and provide such service, instrumentalities, and facilities as shall be safe and *adequate* and in all respects just and reasonable."

Regarding the powers of the Commission to deal with any charges which a utility may make for special services, the same section is quite specific, for it says: "All charges made or demanded by any such gas corporation, electric corporation, or municipality for gas, electricity, *or any service* rendered or to be rendered, shall be just and reasonable and not more than allowed by law or by order of the Commission." It might be that these words could be modified or clarified by some other provision of law, but there is none which seems to have such an effect; and the provision gives this Commission power over charges for any service rendered or to be rendered of the kind here being considered.

In a proceeding (Case 9118) decided in June, 1937, 20 PUR NS 223, the Commission passed upon a somewhat analogous question. That case involved a determination of the extent of the jurisdiction of this Commission over the practices and methods followed by the New York Telephone Company in the preparation, publication, and distribution of the classified directory and the terms and conditions upon which names of telephone subscribers were published in such directory. Two directories were issued by

the New York Telephone Company, one in which the names of subscribers in a specified area were arranged alphabetically and the other a directory in which subscribers were classified according to the business performed; and a large part of the volume was devoted to advertising. The New York Telephone Company contended that the Commission had no jurisdiction over the handling of the classified directory, as it was their "private business" and consequently not subject to any regulation or control; that it was a "by-product of its public undertaking but . . . in no way a part thereof"; and that it was no essential part of telephone service.

The decision of the Commission was to the effect that the company was not required to perform all of the services which it voluntarily rendered, including a classified directory, but that its preparation and publication was an incidental part of telephone service. But more important, it was held that as the company had voluntarily undertaken to furnish such service, it was a part of its telephone service and therefore subject to regulation. It was held that § 91 of the Public Service Law, which contains the same wording as quoted above for gas and electric service, covered the charges being made for advertisements in the classified directory and that the language was not limited to charges for telephone service as narrowly defined. The opinion said, after quoting other provisions of the statute (20 PUR NS at p. 229):

"In all of the provisions cited, the jurisdiction conferred is very broadly stated. There is no limitation to 'essential' telephone service. There is no statement that a telephone company may conduct a 'private' business as it pleases, charging whatever it pleases, giving undue preference to certain persons and subjecting others to unjust discrimination. A corporation cannot be compelled to do many things, but if it elects to do them, it must proceed under the limitations and restrictions imposed by law. The mere fact that it does them voluntarily and not compulsorily does not give it authority to operate as it pleases. Thus, in the specific case at issue, it may be that the company could not be compelled (I do not say it could not) to provide classified directories. But having done so, its charges, methods, practices, etc., come under the jurisdiction of this Commission, and if they are unreasonable or in any manner violate the law, the Commission has been given power to apply a remedy."

The provisions of the Public Service Law, which specifically apply to the question herein discussed, are stated in par 12 of § 66 where the Commission is specifically given authority "to require every gas corporation, electric corporation, and municipality to file with the Commission and to print and keep open to public inspection, schedules showing *all rates and charges made,* established or enforced or to be charged or enforced, all forms of contract or agreement and all rules and regulations relating to rates, charges or services used or to be used, and all general privileges and facilities granted or allowed by such gas corporation, electric corporation, or municipality; . . . "

[3] It has also been stated that a company may make any charges for special services not mentioned in the

rate schedule which it wishes to charge, where there is nothing in the rate schedule prohibiting said charges or purporting to establish them. Such a claim indicates that the Public Service Law has not been carefully read, for the section quoted above specifically says that the Commission may require a company to include in its published schedule "*all* rates and charges made, established, or enforced or to be charged or enforced" and the law then proceeds to state that: "No corporation or municipality shall charge, demand, collect, or receive a greater or less or different compensation *for any service* rendered or to be rendered than the rates and charges applicable to such services as specified in its schedule filed and in effect at the time; . . ."

The Commission has prescribed rules and regulations regarding the filing of rate schedules. These are set forth in Circular 102 and there seems to be no provision in such circular that attempts to modify the provisions of statute and of course if there were any such provision or any statement, it would be without any force or effect, as the provisions of law cannot be changed by a circular issued by the Commission.

As the law seems to be clear and a formal proceeding unnecessary, I recommend the adoption of an order requiring every corporation and municipality rendering gas service, electric service, or gas and electric service to include in its rate schedule all rates and charges which are being made for each and every service rendered, except merchandise and jobbing, and to file with this Commission not later than August 1, 1948, such changes in its rate schedules as are necessary to comply with such order. Services for which no special charges are being made need not of necessity be included in the rate schedule.

OHIO PUBLIC UTILITIES COMMISSION

The Cincinnati Gas & Electric Company

v.

City of Cincinnati

Nos. 12,603, 13,158
May 25, 1948

COMPLAINT *and appeal from ordinance fixing gas rates; higher rates approved.*

Apportionment, § 11 — Gas transmission expense.

1. Apportionment of transmission expense, in order to determine transmission costs for furnishing gas service within a city, should be on the basis of volume delivered rather than a basis using the two factors, mileage of trans-

portation and demand or volume, which would result in a different transmission cost, per unit of volume, for each municipality, p. 11.

Expenses, § 71.1 — Maintenance of customers' appliances.

2. Expenditures by a gas company for labor, materials, and expenses for maintenance of customers' appliances should be allowed as an operating expense when a like service is furnished on appliances of all customers and such service promotes safe, efficient utilization of gas furnished, p. 11.

Apportionment, § 11 — Gas distribution expense — Maps and records.

3. The expense of preparation of records and maps as part of the distribution expense of a gas company should be apportioned on the basis of the number of customers, instead of a basis giving consideration to the size of distribution mains, p. 11.

Apportionment, § 30 — Sales promotion expense — Gas utility.

4. An apportionment of sales promotion expense of a gas utility based on number of customers was accepted in preference to an apportionment on a thousand cubic foot sales basis, where, in the use of this basis, there had been included deliveries to two large customers consuming approximately 10 per cent and 14 per cent, respectively, of the total gas sold, p. 12.

Expenses, § 26 — Advertising and sign expense — Sale of equipment.

5. Expense incurred by a gas utility for advertising and a neon sign for the benefit of distributors of gas refrigerators and air conditioning equipment should be excluded from operating expense, in the absence of testimony as to benefits to the utility or the users of service resulting from these expenditures, p. 12.

Expenses, § 63 — Legal expense — Litigation over policy of management.

6. Legal expenses incident to a civil suit arising from management policies when a gas utility was a subsidiary of a holding company should be excluded from operating expense as not attributable to the furnishing of service, p. 12.

Expenses, § 48 — Dues.

7. Expenditures by a gas company for association dues, when not excessive and confined to reasonable amounts, are matters within the discretion of management and should be allowed in a determination of cost of service, p. 12.

Expenses, § 46 — Donations.

8. Expenditures by a gas company for donations, when not excessive and confined to reasonable amounts, are matters within the discretion of management and should be allowed in the determination of cost of service, p. 12.

Expenses, § 89 — Regulatory costs — Engineering fees — Property valuation.

9. A payment made by a gas company to an engineering firm for preparation of a valuation of the property, submitted in negotiations relative to gas rates prior to hearings held before the Commission, should be included in the cost of service, p. 12.

Expenses, § 76 — Administrative costs — Registrar — Trustee — Transfer agent — Reports.

10. Expenditures by a gas company for registrar services, transfer agent and disbursing agent services and expenses, trustee service and expenses,

printing of annual reports to stockholders, and printing of other reports to stockholders should be allowed in the determination of cost of service, p. 12.

Depreciation, § 56 — Gas utility.

11. A depreciation allowance slightly in excess of 2 per cent of book value of gas property used and useful in furnishing service was approved, p. 13.

Return, § 7 — Relation to capitalization — Disregard of value.

12. The fair rate of return of a gas utility should not be arrived at by taking the present capitalization, determining bond interest and preferred stock dividend requirements, and then adding a return on common stock equity, thereby nullifying any finding of value made in accordance with legislative mandate, p. 14.

Return, § 9 — Fair value basis.

13. Findings on costs of gas utility service should include a fair return on the fair value of the property dedicated to the furnishing of service, p. 14.

Valuation, § 309 — Working capital — Gas utility.

14. Minimum working capital requirements of a gas utility should be sufficient to provide funds for payment of one-eighth of a year's operating expenses (exclusive of taxes, depreciation and purchased gas), an average month's supply of materials on hand during the year under consideration, exclusive of fuel, plus the allowance of 1/24 of the cost of gas purchased during the year, p. 14.

By the COMMISSION: The city of Cincinnati on October 29, 1941, passed Ordinance No. 404–1941, regulating the price to be charged by The Cincinnati Gas & Electric Company, its successors or assigns, for gas furnished to consumers in the city of Cincinnati; determining the type and quality of said gas; and repealing Ordinance No. 313–1939. This Ordinance No. 404–1941 was accepted by The Cincinnati Gas & Electric Company on October 31, 1941. Said ordinance was to be in effect until May 31, 1944. On the 31st day of May, 1944, an Emergency Ordinance No. 195–1944 was passed by the city of Cincinnati, containing the same rates, terms, and conditions provided in Ordinance No. 404–1941 for the period from June 1, 1944 to June 30, 1944. Said Emergency Ordinance No. 195–1944 was accepted by The Cincinnati Gas & Electric Company on the 2nd day of June, 1944. The rates contained in said Ordinance No. 404–1941 are as follows: [Ordinance rates omitted.]

On the 31st day of May, 1944, the city passed Ordinance No. 198–1944, specifying rates for gas furnished to consumers in the city of Cincinnati for the period from and after June 30, 1944, until July 1, 1946. Said ordinance was not accepted by The Cincinnati Gas & Electric Company and is the basis of the complaint and appeal of said company, proceeding No. 12,603, on the dockets of this Commission. On May 29, 1946, the city of Cincinnati passed Ordinance No. 175–1946, regulating the price to be charged by The Cincinnati Gas & Electric Company, its successors or assigns, for mixed gas furnished to con-

sumers in the city of Cincinnati from June 30, 1946, to July 1, 1948. Said ordinance was not accepted by The Cincinnati Gas & Electric Company and is the basis of the complaint and appeal of said company in proceeding No. 13,158, on the dockets of this Commission. The rates contained in Ordinance No. 198–1944 and Ordinance No. 175–1946 are the same rates in each and are as follows:

(a) For Gas Used in Residences:

For the first 1000 cubic feet per month, 71.25 cents per thousand cubic feet.
For the next 1000 cubic feet per month, 66.50 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 61.75 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 57 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 52.25 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 47.50 cents per thousand cubic feet.
For all in excess of 10,000 cubic feet per month, 42.25 cents per thousand cubic feet.

(b) For Gas Used for Commercial and Industrial Purposes:

For the first 1000 cubic feet per month, 71.25 cents per thousand cubic feet.
For the next 1000 cubic feet per month, 66.50 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 61.75 cents per thousand cubic feet.
For the next 2000 cubic feet per month, 57 cents per thousand cubic feet.
For the next 5000 cubic feet per month, 52.25 cents per thousand cubic feet.
For the next 489,000 cubic feet per month, 47.50 cents per thousand cubic feet.
For all in excess of 500,000 cubic feet per month, 42.25 cents per thousand cubic feet.

Provided, however, that if any monthly bill as computed according to the above rates and charges shall amount to less than 75 cents, the company may charge a minimum bill of 75 cents.

The Cincinnati Gas & Electric Company elected to charge during the pendency of these appeals, the rates immediately in effect prior to the taking effect of either of said ordinances and which rates were those in effect in City Ordinance No. 404–1941. Said rates for gas service in Cincinnati were filed with this Commission and are known as P.U.C.O. No. 6, Original Sheet No. 7, for Residential Gas Service in Cincinnati and P.U.C.O. No. 6, Original Sheet No. 7–A, for Commercial and Industrial Gas Service in Cincinnati. Said rates are as follows:

Residential Gas Service in Cincinnati

Availability.
Gas service in residences and other buildings connected therewith, not of a commercial or public character.

Commodity Charge.
75 cents per thousand cubic feet for first 1,000 cubic feet used in the month.
70 cents per thousand cubic feet for next 1,000 cubic feet used in the month.
65 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
60 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
55 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
50 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
45 cents per thousand cubic feet for all gas used in the month in excess of 10,000 cubic feet.

Minimum Monthly Charge.
75 cents per meter.

Delayed Payment Charge.
Five cents per thousand cubic feet, will be added, when bills are not paid at the company's offices within five days after date of bill, Sundays and holidays excepted. Said charge will not be less than 5 cents.

Commercial and Industrial Gas Service in Cincinnati

Availability.
Gas service in stores, factories, and/or other buildings of a commercial, industrial, or public character.

Commodity Charge.
75 cents per thousand cubic feet for first 1,000 cubic feet used in the month.
70 cents per thousand cubic feet for next 1,000 cubic feet used in the month.
65 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
60 cents per thousand cubic feet for next 2,000 cubic feet used in the month.
55 cents per thousand cubic feet for next 5,000 cubic feet used in the month.
50 cents per thousand cubic feet for next 489,000 cubic feet used in the month.
45 cents per thousand cubic feet for all gas used in the month in excess of 500,000 cubic feet.

Minimum Monthly Charge.
75 cents per meter.
Delayed Payment Charge.
Five cents per thousand cubic feet, will be added, when bills are not paid at the company's offices within five days after date of bill, Sundays and Holidays excepted. Said charge will not be less than 5 cents.

The Cincinnati Gas & Electric Company gave its undertaking in favor of the state of Ohio as provided by law, guaranteeing the refunding of any moneys which might be due its consumers, after final determination of the issues herein.

During the latter part of the year 1946 and up until May 1, 1947, representatives of the city and The Cincinnati Gas & Electric Company, entered into a very extensive series of negotiations in an attempt to arrive at an agreeable rate for gas service furnished Cincinnati, Ohio, and not having met with success, said two proceedings by agreement were assigned for hearing by this Commission, starting May 19, 1947. Hearings were held seven days in May, 1947, one day in June, two days in July, and seven days in September, 1947.

On September 18, 1947, the direct and cross-examination of witnesses for the company having that day been completed, the company urged that the city of Cincinnati proceed at an early date with presentation of its witnesses and in support of this request presented the testimony of Mr. Walter Beckjord, president of The Cincinnati Gas & Electric Company. In his testimony Mr. Beckjord stated that if the company was to be able to finance the $50,000,000 to $65,000,000 postwar program of improvements made necessary by increased demands for service it was necessary that the company earnings be not impaired. That because of increased costs of operation and additional investments already made to meet demands for gas service, the rates now being collected pending determination of the issues in this case are insufficient. That in the next two years the company must finance $25,000,000 of additions to its gas and electric property to meet additional demands for service and that the earnings under the presently collected rates, if continued during protracted litigation were deficient and would impair the company in financing the required additions to property.

Counsel for the city of Cincinnati replied that the city would be unable to proceed with the presentation of its case before November 1, 1947.

The Commission then assigned the matter for further hearing on October 1, 1947.

The matter came on for hearing on October 1, 1947, at which time the city of Cincinnati stated it would be unable to proceed before November 1, 1947. The city further objected to the introduction of any testimony relative to the necessity of fixing a temporary rate under § 614–32 and cited the provisions of § 614–47 as precluding any such action by this Commission on an appeal from an ordinance.

The company then presented the testimony of Mr. Walter Beckjord, president of The Cincinnati Gas & Electric Company and of Mr. William Zimmer, treasurer of The Cincinnati Gas & Electric Company. The testimony of these two witnesses elaborated on the testimony of Mr. Beckjord submitted on September 18, 1947, as to the inadequacy of the presently collected gas rates and the resulting detriment to any financing of a necessary

large-scale program of additions to meet demands for service.

The Commission then called for testimony of Mr. Conklin Jackson of the Commission's accounting staff and Mr. O. F. Foster, an assistant chief engineer of the Commission. Mr. Jackson testified as to the costs of operation and revenues derived in the furnishing of gas by the company within the city of Cincinnati for the year ended December 31, 1946, and the year ended August 31, 1947. Mr. Foster testified as to the book-cost of the property used in the furnishing of gas in the city of Cincinnati as of August 31, 1947, which book-costs are the original costs of the property when first dedicated to the furnishing of service.

On the representations of witnesses at the hearing held on October 1, 1947, the Commission on October 20, 1947, issued its finding, opinion, and order fixing interim rates to be charged pending final determination of the issues in these two complaints and appeals and required of The Cincinnati Gas & Electric Company as a condition to the imposition and collection of the prescribed interim rates the filing of an acceptable bond or undertaking to guarantee to the users of service within the city of Cincinnati a refund of the difference between the interim rates prescribed, and any lower rates that may be fixed on final determination of the issues in these cases.

The prescribed interim rates are as follows:

Interim Rate

Commodity Charge
- First 1,000 cubic feet or less used in the month, $1.00.
- Next 1,000 cubic feet used in the month, 70 cents per thousand cubic feet.
- Next 4,000 cubic feet used in the month, 65 cents per thousand cubic feet.
- Next 4,000 cubic feet used in the month, 60 cents per thousand cubic feet.
- Next 50,000 cubic feet used in the month, 55 cents per thousand cubic feet.
- Over 60,000 cubic feet used in the month, 50 cents per thousand cubic feet.

Minimum Monthly Charge
- $1.00 per meter.

Delayed Payment Charge
- Five per cent will be added when bills are not paid at the company's offices within five days after date of bill, Sundays and holidays excepted. Said charge will not be less than 10 cents.

The above charges are considerably less than those set forth in Company Exhibit No. 64 submitted to this Commission at the hearing on October 1, 1947 and which were as follows:

Commodity Charge
- First 1,000 cubic feet or less used in the month, $1.00.
- Next 1,000 cubic feet used in the month, 8.0 cents per hundred cubic feet.
- Next 8,000 cubic feet used in the month, 7.0 cents per hundred cubic feet.
- Next 50,000 cubic feet used in the month, 6.0 cents per hundred cubic feet.
- Next 440,000 cubic feet used in the month, 5.5 cents per hundred cubic feet.
- Over 500,000 cubic feet used in the month, 5.0 cents per hundred cubic feet.

Further hearings were held on October 1, 1947, November 5, 6, and 12, 1947, December 10 and 11, 1947, January 12, 1948, and May 6, 1948 and the matter now comes on for final disposition of the issues therein.

Value of Property Used and Useful in the Furnishing of Service

Evidence Submitted by Company and City

As regards the value of the property used and useful in the furnishing of the service, rates for which are a matter of complaint and appeal herein, the company in its Exhibit 42–A, testified to a reproduction cost new less depreciation of $24,282,868 as of June 30,

1944. In its Exhibit No. 43–A it further testified to a value of $27,719,189 as of June 30, 1946. The city in its Exhibit No. 26, submits testimony as to a value of $16,822,780 as of June 30, 1944, and in its Exhibit No. 5 shows a finding of value of $18,090,107 as of June 30, 1946.

Operating Expenses

Production Expense

This group of expenses includes cost of all gas purchased as well as that produced and therefore in amount is greater than any other functional group of expenses. The city and the company are in agreement in regard to all items of production expense.

Transmission Expense

[1] The city and company are in agreement as to the transmission expense for the company's entire operations. In their determinations of transmission costs for the furnishing of service within the city of Cincinnati the parties use different bases for apportioning from the total transmission expense the proportion assignable to service within the city. The city uses the "Gas Transported through Lines" basis which uses two factors, mileage of transportation and demand or volume. This method results in a different transmission cost, per unit of volume, for each municipality. The company distributes the cost on a volume delivered basis. The method used by the city, as shown on page 17 of City Exhibit No. 6 and page 17 of City Exhibit No. 27, also fails to give consideration to the fact that gas delivered at the company's East Works is used in part for the furnishing of service outside the city of Cincinnati. A consideration of the methods used by the respective parties in the determination of transmission expense for the furnishing of service within the city of Cincinnati discloses that the method used by the company is more consistent with the economics of operation of the system than is the method used by the city. In our determination of the reasonable costs of service herein the method used by the company for apportionment of transmission expense will be used.

Distribution Expense

[2, 3] The city has eliminated, before apportionment of this expense between service within the city of Cincinnati and elsewhere, an amount of $17,824.80 included by the company in its expenses in the year 1944 and an amount of $20,315.51 similarly included by the company in costs of service for the year 1946. The amounts excluded are expenditures for labor, materials, and expenses for maintenance of customers' appliances. Another difference less in amount results from use by the city of a 3-inch equivalent miles of distribution mains basis for apportionment of labor, materials, and expense for distribution system maps and records whereas the company apportions this expense on the basis of the number of customers served. As regards the expense of maintenance of customers' appliances, it appears from the record in the case that a like service is furnished on appliances of all customers and that such service promotes safe, efficient utilization of gas furnished. In the determination of cost of service expenditures for maintenance of customers' appliances will be included. As regards the apportionment of the costs of distribution map and records, it ap-

pearing that the expense of preparation of records and maps for a 12-inch line is the same as for a 2-inch line the company method of allocation based on the number of customers will be used instead of the city method which gives consideration to the size of the respective lines.

Customers' Accounting and Collecting Expense

On these items of expense there is no disagreement between city and company.

Sales Promotion Expense

[4, 5] As regards these expenses the city is lower in the amount of these expenses allocated to the furnishing of service in the city of Cincinnati by an amount of $9,000 for the year 1944 and $35,000 in the year 1946. These differences result (1) from use by the city of the thousand cubic-foot sales basis for apportionment of these expenses between service within and outside of the city whereas the company uses the number of customers basis and (2) the city excludes from expenses, before allocation, the sum of $16,408.64 paid by the company for advertising and an outdoor neon sign.

The results on allocation on either basis (customers or sales), would result in substantially the same apportionment were it not for the fact that the city has included in the volume of sales the deliveries to The American Rolling Mills at Middletown and those to the city of Hamilton which distributes gas through a municipally owned system in Hamilton. In 1944 these two customers consumed 10.33 per cent of the total gas sold by the company and for 1946 the corresponding figure was 14.39 per cent. It is quite evident that the proper proportion of sales promotion expense assignable to these two customers is much less than the percentages of total sales that their requirements represent. In the determination of costs of service assignable to the city of Cincinnati herein the apportionment of sales promotion expense will be made on a customer ratio basis.

As regards the advertising and sign expense for the year 1946 excluded by the city, it appears that the advertising and sign were paid for by the company for Floyd and Company, distributors of Servel gas refrigerators and gas-fired air conditioning equipment. The record in the case fails to disclose any testimony relative to any benefits to The Cincinnati Gas & Electric Company or the users of its service resulting from these expenditures. In the determination of the costs of service these expenses will be excluded.

Administrative and General Expenses

[6–10] From expenses for the year 1944, before allocation, the city eliminates an item of $25,000 of Special Services — Legal, $1,621.87 from Company Association Dues and $4,306.15 from Donations. From expenses for the year 1946, before allocation, the city eliminates $3,500 from Special Services — Other, $1,000 from Special Services—Legal, $1,826.08 of Company Association Dues, $8,901.07 of Other Miscellaneous Expense, and $4,245.83 of Donations. Additional small differences between city and company are the result of percentages of allocation to service within the city of Cincinnati. These differences are merely a matter of computation predicated on allocated amounts in other accounts

and the amounts included herein for costs of service will be the result of allocation bases herein used. As regards the Special Services — Legal, in the amount of $25,000 in 1944 and $1,000 in 1946, these are expenses incident to a civil suit brought by John L. Davies in the courts of Franklin county, Ohio, which suit arises from certain management policies when the appellant was a subsidiary of Columbia Gas and Electric Company. Consistent with the treatment of like expenditures of other subsidiaries of Columbia Gas and Electric Company in prior cases before this Commission these amounts are herein excluded in the determination of costs of service for the reason that these costs are not attributable to the furnishing of service but arise through policy of management. It appearing that the expenditures for Company Association Dues and Donations are not excessive and that such expenditures when confined to reasonable amounts are matters within the discretion of management, these expenditures are herein included in the determination of costs of service. The expenditure of $3,500 for Special Services—Other in the year 1946, which amount was excluded by the city is a payment made to the engineering firm of Jensen, Bowen and Farrell for preparation of a valuation of the property of the company used in the furnishing of gas service in the city of Cincinnati. This valuation was submitted by the company to the city in negotiations relative to gas rates prior to the hearings held before this Commission. The expenditure appears to be a reasonable one and is included herein in the cost of service. The expenditure of $8,901.07 in 1946 for Other Miscellaneous Expense and excluded by the city from the cost of service was made for registrar services, transfer agent, and disbursing agent services and expenses, trustee service and expenses, the printing of the annual report to stockholders and the printing of other reports to stockholders. These expenditures are herein included in the determination of the costs of service.

Wage Adjustment

The company increased wages during the year 1946 and to reflect the effect of this wage increase for an entire year an adjustment upward in the amount of $48,496 is herein made in the costs of service predicated on operations for the year 1946.

Annual Allowance for Depreciation

[11] The city includes in the cost of service within the city of Cincinnati an amount of $179,980 in 1944 and $181,862 in 1946 for annual allowance for depreciation. This is computed at an annual rate of 1.25 per cent per year on the original cost of the property. The company includes in the cost of service the actual accruals for depreciation of gas property in the respective years and then allocates the assignable portion thereof to service furnished within the city of Cincinnati. By use of this method the company arrives at an amount of $311,929 and $309,900 for 1944 and 1946 respectively for provision for depreciation of property used and useful in the furnishing of gas service within the city of Cincinnati. These sums are slightly in excess of 2 per cent of the book value of property of the company used and useful in the furnishing of service. From an examination of the present

depreciation reserve of the company, having regard for the present condition of the property as herein testified to, it does not appear that the reserve provisions have been excessive. This reserve was accrued at rates consistent with those herein used in the determination by the company for annual allowances for depreciation. In the determination of the cost of service herein provisions for depreciation of property used in the furnishing of gas service within the city of Cincinnati will be made in the amounts of $311,929 for the year 1944 and $309,900 for the year 1946.

Rate of Return

[12, 13] On the matter of a fair rate of return the company submitted the testimony of its witness, Dr. H. B. Dorau. The city submitted the testimony of its witness, Dr. Laurence S. Knappen. Between the two witnesses there was little difference of opinion as regards the cost of bond and preferred stock money in arriving at conclusions. Almost the sole issue between the two witnesses in regard to cost of money was in regard to the cost of common stock money. However this difference of opinion was a minor factor in the conclusions arrived at by the respective witnesses. Dr. Dorau took the position that a fair rate of return determined should be applied to the rate base arrived at. Dr. Knappen took the present capitalization of the company, determined bond interest and preferred stocks dividend requirements and to this added a return of 8.75 per cent on the common stock equity. The sum of these amounts produced what Dr. Knappen termed a fair return in dollars. This was his testimony as to fair return regardless of the size of the rate base. To thus determine the amount that a utility may earn on the property used and useful in the furnishing of service makes any determination of value of property insignificant. The legislature of the state of Ohio has very specifically set forth the methods and principles upon which this Commission shall base its findings as to the reasonableness of rates of a utility. The statutes provide that there shall be a determination of the fair value of the property, which fair value shall be the cost of reproduction new less observed depreciation as of a date certain. To use the method advocated by the witness, Dr. Knappen, for the determination of return to the utility in the property dedicated to the service would nullify and make meaningless any finding of value made in accordance with the legislative mandate. In the determination of the issues herein this Commission will predicate its findings on costs of service which include a fair return on the fair value of the property dedicated to the furnishing of service.

Working Capital

[14] In its determination of the value of property used and useful in the furnishing of gas to consumers in the city of Cincinnati the city includes an allowance for working capital in the amount of $411,853 in the valuation as of June 30, 1944, and an allowance of $428,886 in the valuation as of June 30, 1946. The company includes a corresponding amount of $825,000 in its valuation as of June 30, 1944, and for 1946—$946,000. Practically all of the differences between city and company in the deter-

mination of allowances for working capital are the result of the city excluding any allowance for purchased gas whereas the company included in its estimates an allowance for payment for an average six weeks' cost of purchased gas. In the determination of the issues herein it appears that minimum working capital requirements should be sufficient to provide funds for payment of one-eighth of a year's operating expenses (exclusive of taxes, depreciation, and purchased gas), an average month's supply of materials and supplies on hand during the year under consideration, exclusive of fuel plus the allowance of 1/24 the cost of gas purchased during the year under consideration. This method results in an inclusion in rate base for working capital in the amount of $578,958.76 for a valuation as of June 30, 1944, and an amount of $642,111.72 in the valuation as of June 30, 1946.

Applying the rates prescribed by the ordinances herein complained and appealed from to the sales for the years 1944 and 1946 and deducting therefrom the costs of service herein determined for the respective years and revising the company and city valuations as regards allowance for working capital there remains as a return to the company for the year 1944 the sum of $347,405.54, which amounts to a return of 2.04 per cent on the value of the property herein found by the city as of June 30, 1944, and a return of 1.44 per cent on the value as of June 30, 1944, testified to by witnesses for the company. For the year 1946 the rates prescribed by ordinance provide a return of $393,829.32 amounting to 2.15 per cent on the value of the property testified to by the city's witness and a return of 1.44 per cent on the value of the property testified to by witnesses for the company after deduction of the costs of service herein found for the year 1946.

It therefore appears that the rates prescribed by said ordinances herein complained of and appealed from are insufficient to provide to said appellant, The Cincinnati Gas & Electric Company, an adequate return on the value of the property dedicated to the furnishing of gas to users within the city of Cincinnati, Ohio, and said rates are therefore unjust and unreasonable and should be set aside and held for naught; that there should be substituted therefor rates sufficient to provide to appellant herein, The Cincinnati Gas & Electric Company, a fair return on the value of the property dedicated to the furnishing of gas to users within the city of Cincinnati, Ohio.

In the course of the proceedings before this Commission the appellant company has submitted for the record a schedule of rates designated "Proposed Rate A." The appellant company has further stated on record in this case that regardless of the ultimate disposition of the issues in this case it deems it impractical to undertake any retroactive collection from customers in excess of the amounts actually collected during the pendency of this appeal. The appellant has further stated on the record that for the purposes of disposition of the issues herein it will charge for the remainder of the ordinance period rates not to exceed those set forth in "Proposed Rate A."

The rates set forth in "Proposed Rate A" are as follows:

Gas Service in Cincinnati

Availability

Within the corporate limits of the city of Cincinnati, where mains are adjacent to the premises to be served.

Applicable to gas service required for any purpose by an individual customer on one premises.

Commodity Charge

For the first 1,000 cubic feet or less used in any one month, $1.00.

For the next 1,000 cubic feet used in any one month, 7.0 cents per hundred cubic feet.

For the next 4,000 cubic feet used in any one month, 6.5 cents per hundred cubic feet.

For the next 44,000 cubic feet used in any one month, 6.0 cents per hundred cubic feet.

For the next 50,000 cubic feet used in any one month, 5.5 cents per hundred cubic feet.

For all over 100,000 cubic feet used in any one month, 5.0 cents per hundred cubic feet.

Minimum Monthly Charge

$1.00 per meter.

Payment

The Net Monthly Bill is payable within five days from date, Sundays and holidays excepted. When not so paid, the Gross Monthly Bill, which is the Net Monthly Bill plus 5% (not less than 10¢) is due and payable.

Term of Service

One year, terminable thereafter on ten days' written notice by either customer or company.

Service Regulations

The supplying of, and billing for, service and all conditions applying thereto, are subject to the jurisdiction of the Public Utilities Commission of Ohio and to company's General Service Rules and Regulations currently effective, as filed with the Public Utilities Commission of Ohio, as provided by law.

Schedule 5 made a part of this finding and opinion shows that the rates and charges collected by the company during the year 1944 provided to appellant herein, The Cincinnati Gas & Electric Company, on the sales of gas within the city of Cincinnati, Ohio, after deduction of costs of service herein allowed, a return of 2.844 per cent on the city's valuation after adjustments of working capital as above set forth and a return of 2.01 per cent on the valuation submitted by the company with working capital allowance adjusted.

Schedule 6 made a part of this finding and opinion shows that for the year 1946 the rates set forth in "Proposed Rate A" would have provided to the company after deduction of the cost of service herein allowed for that year a return of 6.44 per cent on the valuation submitted by the city adjusted for working capital as set forth herein and a return of 4.3 per cent on the valuation submitted by the company similarly adjusted as to allowance for working capital.

It appearing and the Commission hereby finding that the rates and charges set forth in "Proposed Rate A" will not provide an unreasonable return on either of the valuations submitted by the parties in this case, the rates and charges set forth in "Proposed Rate A" and herein found to be just and reasonable rates will be substituted from and after the effective date of this order for the rates and charges set forth in the ordinances herein complained of and appealed from.

State ex rel. Rice, Doing Business As Doniphan Telephone Company

v.

Missouri Public Service Commission et al.

— Mo —, — SW2d —
January 12, 1948

APPEAL *from lower court order affirming Commission decision on division of toll revenues; affirmed. For Commission decision see (1946) 63 PUR NS 184.*

Telephones, § 9 — Commission jurisdiction — Division of toll revenues.

1. The Commission has jurisdiction to prescribe the manner of dividing toll revenues between connecting telephone companies when the companies themselves cannot agree upon the division, p. 19.

Appeal and review, § 32 — Commission order — Evidence.

2. The court has the express duty, in reviewing a Commission order, to determine whether it is supported by competent and substantial evidence, p. 19.

Evidence, § 18 — Meaning of substantial evidence.

3. The term "substantial evidence" implies and comprehends competent and credible evidence which, if true, would have a probative force upon the issues, p. 19.

Appeal and review, § 41 — Scope of judicial review of evidence.

4. An appellate court as a matter of law passes upon the matter of substance and not of credibility of evidence presented in a Commission proceeding, p. 21.

Evidence, § 18 — Weight — Credibility.

5. Triers of fact, under their duty to weigh the evidence in a proceeding, may disbelieve evidence which is not credible although it is uncontradicted and unimpeached, p. 21.

Evidence, § 4 — Consideration of matters not of record.

6. Comparative figures in a Commission report on division of telephone toll revenues, when not introduced in evidence at the hearing, are unauthorized and improper and will not be considered by an appellate court, since a party to a proceeding has a right to have all matters in the record introduced openly so that he may question their authenticity, p. 22.

Appeal and review, § 54 — Grounds for reversal — Harmless error.

7. Injection, into a Commission report, of comparative figures not introduced in evidence does not require a reversal of a Commission order where

the purpose of the evidence is simply to contradict and impeach figures introducd by the company's experts and where these figures have otherwise been discredited, so that use of the comparative figures is merely cumulative, p. 22.

Appeal and review, § 34 — Burden of proof — Division of tolls — Confiscation.

8. A party who claims that a division of toll revenues as ordered by the Commission is confiscatory has the burden of showing it to be such, and a court will not interfere with the Commission's determination unless confiscation is clearly established, p. 22.

Appeal and review, § 35 — Scope of review of Commission order — Division of tolls.

9. The court, in reviewing an order of the Commission prescribing the basis for dividing toll revenues between telephone companies, is limited to the determination of the sole question of whether the Commission's order is reasonable and lawful, p. 22.

DOUGLAS, PJ.: D. A. Rice, the appellant, owns and operates under the name of Doniphan Telephone Company three small telephone exchanges in Wayne county. The Piedmont Exchange has 220 telephones, Williamsville has 25, and Greenville has only three, all toll stations. Rice also owns the connecting lines between these three points and furnishes toll service between them. Rice acquired the properties in 1935 by purchase from the Referee in Bankruptcy for the North Central Telephone Company. That company had connected its lines with the long-distance lines of the Southwestern Bell Telephone Company and furnished toll service to its subscribers over the Bell network. After Rice acquired the properties, Bell attempted to negotiate an arrangement for dividing toll revenues with him but reaching no agreement after six years Bell decided to discontinue toll service. Thereupon, the Public Service Commission ordered Bell to continue its toll connection with Rice, and Rice to continue to accept toll service from Bell.

The Commission also initiated an inquiry and investigation for the purpose of determining the reasonable and proper division of toll revenues between the parties under § 5670(3) RS 1939, Mo RSA. This section empowers the Commission to order a physical connection between telephone lines on its own motion, and if the parties do not agree on a division of the joint tolls among themselves, the Commission may establish such division after a hearing.

The Commission held a hearing at which the Commission itself, Rice, and Bell all produced witnesses. Upon the completion of the hearing the Commission entered its report and order wherein it found as follows: Bell has prepared and uses a standard form of contract for furnishing long-distance toll service to local exchanges and for division of toll revenues, known as a Traffic Agreement. At the time of the hearing every telephone system in Missouri had executed such a standard Traffic Agreement with Bell except Rice. Rice was demanding a larger percentage of the gross toll revenues than the division permitted under such agreement. Rice claimed he was los-

ing money on long-distance service, and that his share of the toll revenues under the Traffic Agreement was grossly inadequate for his needs. The Commission found the evidence produced in Rice's behalf attempting to justify a larger share of the division for him was not entitled to credence. The Commission found the division under Bell's Traffic Agreement was reasonable and fair, and ordered Rice to continue toll connections with Bell and to divide toll revenues received therefrom according to the Traffic Agreement until further order of the Commission.

Rice appealed to the circuit court which affirmed the Commission's order. He then appealed to this court, claiming the division of revenues so ordered is confiscatory and deprives him of his property without due process of law.

[1] Rice first attacks the jurisdiction of the Commission to prescribe the manner of dividing the toll revenues. There can be no question but that under § 5670(3) the Commission has jurisdiction both to order the connection of the lines as well as the manner of dividing the toll revenues derived therefrom, inasmuch as the parties themselves did not agree upon the division. Even if the statute did not expressly authorize the Commission to determine the division of tolls as it does, it has been held that such power is a necessary incident to the power to require the connection of telephone lines. See 52 Am Jur, Teleg. and Teleph. § 47; Anno 16 ALR 352.

[2, 3] In exercising its jurisdiction generally we have heretofore announced the rule in our decisions that the orders of the Commission must be based on competent and substantial evidence. State ex rel. Public Service Commission v. Shain (1938) 342 Mo 867, 119 SW2d 220. It is now our express duty, under the new constitution, in reviewing an order of the Commission to determine whether it is "supported by competent and substantial evidence upon the whole record." Art V, § 22 Const 1945. By "substantial evidence" is meant evidence which, if true, would have a probative force upon the issues. Berkemeier v. Reller (1927) 317 Mo 614, 296 SW 739. The term "substantial evidence" implies and comprehends competent, not incompetent evidence. Mississippi Valley Trust Co. v. Begley (1925) 310 Mo 287, 275 SW 540.

Rice complains that there is no evidence in the record to support the Commission's order but that all the substantial evidence supports his contention. Certainly the order must be supported by evidence contained and found in the record. Ohio Bell Teleph. Co. v. Ohio Pub. Utilities Commission (1937) 301 US 292, 81 L ed 1093, 18 PUR NS 305, 57 S Ct 724. And see West Ohio Gas Co. v. Ohio Pub. Utilities Commission (1935) 294 US 63, 79 L ed 761, 6 PUR NS 449, 55 S Ct 316; Interstate Commerce Commission v. Louisville & N. R. Co. (1913) 227 US 88, 57 L ed 431, 33 S Ct 185.

At the hearing the Commission called its chief engineer as its witness. He testified he had made an investigation of Rice's telephone system and found nothing unique in its location as compared to other telephone companies throughout the state, and found nothing unusual or peculiar in Rice's operations which would have a proper

bearing on the question of granting him a greater proportion of tolls than that set out by the Traffic Agreement. The Commission also called its chief accountant who testified that employees of the Commission had gone to Rice to obtain information for the determination of this case. They found he did not follow the uniform system of accounts as prescribed by the Commission in keeping his records, in fact he kept no general books. The only available records were check stubs of bank accounts, a few invoices and contracts, and a subscribers' ledger. They found Rice confused the accounts of his telephone business with other personal business. It was decided that the accounting and engineering work to determine property values, operating expenses and preparation of traffic studies in order to ascertain the details of toll service interchanged with Bell would cost in all about $4,000 which was an expense Rice could not afford. The witness further testified the Traffic Agreement was generally accepted by the telephone companies of this state. The division under the agreement allows for the deduction by each party in the same amount for the costs of originating and terminating toll business from the gross toll revenue, and the balance is then divided in proportion to the length of the toll line haul of each. There was other testimony that the Traffic Agreement represented a fair division and provided adequate revenue from interchange of toll service, and there were 384 such agreements in effect in the state of Missouri. In fact Rice's was the only telephone system which had not entered into such an agreement.

Rice produced evidence to the effect the major part of his system was devoted to toll service and that he could not earn a fair return on the division of toll revenue under the Traffic Agreement. Rice had an inventory and appraisal of his system prepared by experts who also made an analysis of the cost of toll operations and an allocation of plant values to exchange and toll services. Based on these figures the experts testified Rice was losing money on his toll service but earned a return of 17 per cent on his local exchange business. As an example of Rice's figures one expert testified that in addition to the $3,616 Rice retained from the division of toll revenues, Bell should have also paid over to him the extra sum of $7,565.22 in order to make him whole. However, the same expert admitted there might be a "flaw" in his calculations. He also testified the only difference between Rice's system and the normal telephone property in the independent field was that at Greenville Rice had only three stations, all toll, whereas under normal operation the major portion of a telephone business is devoted to local service operation. But the evidence also showed these stations at Greenville were used in Rice's toll service to Piedmont. Also that the old town of Greenville had had about fifty subscribers, that the town was moved because of the building of the Wappapello Dam, and that materials were not then available for rebuilding the local exchange system. The same expert admitted Bell's Traffic Agreement was not unfair but in Rice's case there just wasn't enough paid into the common pot of toll revenues to satisfy all parties.

The Commission found the figures

and calculations presented by Rice's experts were unconvincing and not entitled to credence. In its report it stated (63 PUR NS at p. 189):

"We are unable to give credence to the testimony given respecting the values of the property and the allocations thereof, and neither such values or their allocations is accepted herein as convincing proof thereof. Although Rice produced testimony purporting to show there were exceptional and peculiar conditions surrounding the location and operation of these properties to support his proposed valuations and the allocations thereof, which are contrary to common experience and our own in telephone operations, we still are unable, after giving full credit thereto, to find that there is such a difference as will warrant us in finding the values and allocations proposed by him to be true and correct, and to thereby reach a conclusion that the Bell's proposed division of the tolls and charges shown in its traffic agreements are unreasonable or unfair.

"The Commission cannot find that Rice has shown that the division of the tolls and charges as set forth in these standard traffic agreements offered by the Bell have been or are unreasonable and unfair. On the other hand, this Commission believes that such divisions have been and are reasonable and fair, and so finds."

The Commission's conclusions that there were no exceptional or peculiar conditions with respect to Rice's system, and the proposed division of tolls under the Traffic Agreement was reasonable and fair were all supported by substantial evidence contained in the record of the hearing which is now before us for examination on appeal.

[4] Rice objects to the findings of the Commission because they ignore his evidence. He contends since there was no other evidence adduced which contradicted his figures and calculations, or even disputed them, that the Commission is bound to accept them as true. Accordingly he contends his evidence is the only substantial evidence in the record. In asserting his contention he overlooks that on cross examination his evidence was discredited to such an extent that the Commission held it not entitled to credence. And certainly if evidence is not credible, it does not meet the required test of being substantial. An appellate court as a matter of law passes upon the matter of substance and not of credibility. In other words an appellate court may say that particular evidence is substantial if the triers of the facts believed it to be true. Keller v. St. Louis Butchers' Supply Co. (Mo Sup Ct 1921) 229 SW 173.

[5] Whenever an investigation is conducted by the Commission it is required under the statute to make a report in writing which shall state its conclusions and its decision or order. Section 5688, RS 1939 Mo RSA. Thus it must find and determine the facts. And in doing so the Commission determines the weight of evidence presented to it. Cf. Ohio Utilities Co. v. Public Utilities Commission (1923) 108 Ohio St 143, 140 NE 497. It may disregard evidence which in its judgment is not credible, even though there is no countervailing evidence to dispute or contradict it. The rule is established in this state that the triers of fact under their duty to weigh the evidence may disbelieve evidence although it is uncontradicted and un-

impeached. Wiener v. Mutual Life Ins. Co. (1944) 352 Mo 673, 179 SW2d 39; Woehler v. St. Louis (1938) 342 Mo 237, 114 SW2d 985.

[6, 7] Rice also complains that the Commission's order is based on data not introduced in evidence and not contained in the record. In the Commission's report of the hearing there are figures on the reproduction cost per station and the depreciated value per station of seven Missouri telephone companies for the purpose of comparison with the figures on those two items furnished by Rice's experts. There is no testimony in the record to support the comparative figures nor were they introduced as evidence at the hearing. While no doubt such figures were obtained by the Commission in connection with its official duties in making valuations and their correctness as to the companies they concern is not now questioned, still Rice was entitled to have them introduced at the hearing, and since they were not he was denied the right to go into their authenticity, and their application to his system. Therefore, injecting them into the report of the hearing was unauthorized and improper, and we will not consider them. But since they merely go to contradict and impeach the figures produced by Rice's experts, and inasmuch as that evidence has been otherwise discredited, any use of such comparative figures was merely cumulative, and does not affect or invalidate the Commission's order. The order of the Commission is amply supported otherwise by substantial evidence contained in the record.

We find that at the hearing substantial evidence was adduced that the Traffic Agreement provided a fair and reasonable division of toll revenues, and was generally accepted and in use over the state, and that there was nothing peculiar or exceptional about the location of Rice's system or about its operation which made such agreement unfair as to it.

[8] Rice attempted to show as we have stated above, as in the nature of an affirmative defense, that his system and its operation was unusual and peculiar so that the Traffic Agreement was not reasonably applicable. He had the burden of proving this and his evidence was not sufficient to sustain the burden. He also claims that under the Traffic Agreement the share of the division allowed him is confiscatory. Again he had the burden and his evidence does not sustain this claim. The principle is established that a party who claims a rate is confiscatory has the burden of showing it to be such, and a court will not interfere with the exercise of the rate-making power unless confiscation is clearly established. St. Joseph Stock Yards Co. v. United States (1936) 298 US 38, 80 L ed 1033, 14 PUR NS 397, 56 S Ct 720.

[9] In reviewing an order of the Commission on appeal the court is limited to determining the sole question whether the Commission's order is reasonable and lawful. Section 5690 RS 1939, Mo RSA. If the order is supported by competent and substantial evidence it is not arbitrary, oppressive, or capricious but is reasonable. If the order is within both the evidence of record and the law, it is lawful. We

find the order in this case is both reasonable and lawful and should be affirmed.

Accordingly, the judgment of the trial court affirming the Commission's order is likewise affirmed.

MAINE PUBLIC UTILITIES COMMISSION

Public Utilities Commission

v.

Bangor Gas Company

F. C. 1276
March 31, 1948

APPLICATION *for approval of gas rate increase; amended rate schedules ordered.*

Return, § 22 — Reasonableness.

1. The fairness of return is to be tested not alone with reference to the investors but also to the consumers, who are interested in good service at reasonable rates, p. 28.

Rates, § 130 — Reasonableness — Kind of service — Effect on value.

2. The kind of service being rendered by a public utility company has weight on both the questions of return and value, p. 28.

Rates, § 130 — Reasonableness — Service as factor.

3. A legally established rate presupposes the furnishing of reasonably adequate and efficient service, since rates of any utility have a direct relation to the kind of service provided, p. 28.

Service, § 332 — Gas company — Coal reserve.

4. A coal gas company's reserve capacity of about one-half a day's consumption during peak periods is inadequate, p. 28.

Return, § 36 — Reasonableness — Kind of service.

5. A company using inadequate, expensive, and obsolete equipment, and permitting peak uses to occur with inadequate reserve for breakdowns, should not be permitted to earn the same rate of return as a company rendering up-to-date service in quality, quantity, and price, p. 28.

Rates, § 131 — Reasonableness — Character of service — Proposed improvements.

6. Increased rates will not be put into effect until the utility has made necessary improvements, p. 28.

Return, § 36 — Reasonableness — Kind of service.

7. A utility must be efficiently and economically operated as a condition to the exercise of its right to impose rates that will yield an adequate return, p. 28.

Return, § 36 — Reasonableness — Kind of service.

8. The public cannot be expected to pay rates calculated to produce a fair return on unnecessary property, extravagant construction, and antiquated equipment furnishing inadequate service by ancient methods discarded by the intelligent progress of the art, p. 28.

Payment, § 53 — Discount for prompt payment.

9. The discount for prompt payment of gas bills is, in its nature, a penalty and discriminatory, p. 30.

Payment, § 25 — Rules and regulations — Prepayment meters.

10. A gas company's rule regarding prepayment meters should be eliminated where the company has no such meters and does not intend to have any in the future, p. 30.

Expenses, § 96 — Excessive salaries.

Criticism of the salary of the president and general manager of a utility as being too large in comparison with the past records of the company and out of line with present operation, it being considered an element of dividends via indirection, p. 26.

Depreciation, § 28 — Formula for computation.

Discussion of a formula for depreciation which subtracts from 15 per cent of gross revenues the amount spent for maintenance of production and transmission line, the balance being credited to depreciation reserve, p. 27.

Return, § 2 — Elements of return.

Statement that the return of a utility consists of interest on capital subscribed by the bondholders and dividends or profits to investors who have taken the risk of the enterprise and are finally responsible for its present and future conduct, p. 28.

APPEARANCES: William S. Linnell, Portland, for Bangor Gas Company; John T. Quinn, Brewer, for city of Brewer; Stanley F. Needham, Old Town, for city of Old Town.

By the COMMISSION: Bangor Gas Company was organized in 1850 and has for these many years furnished gas for domestic and commercial purposes to residents of Bangor, Brewer, Veazie, Orono, and Old Town.

The company operates what is known as a coal gas plant, using both coal and oil as the original fuel to manufacture gas, coke, and tar. The controlling common stock of the company was owned until 1945 by American Gas & Power Company. During that year the Kanes of Providence, Rhode Island, and the Cahners of Bangor became owners of nearly all the stock. The company owes bonds (December 31, 1947) in amount of $264,000, 4 per cent due 1971 and has outstanding common stock of a par value of $480,000. It has no other outstanding indebtedness, barring accounts payable and miscellaneous items.

In 1942 there was incorporated into its rate schedule a provision known as a fuel clause, applicable to certain ones of the then prevailing rates. This Commission, following its decree in the Portland Gas Case, directed Bangor Gas Company to remove this fuel clause. It was done by filing a new

schedule of rates designed to care for increased costs of operation, fuel, labor, materials, and net a reasonable return to the owners of the company.

These rates were to become effective February 9, 1948, were ordered suspended for three months, hearing on same to be held at Bangor on March 9, 1948. At the time and place of the hearing, notice was proved to have been given as ordered and the appearances noted as above.

The company in common with all users of coal and oil has been met with constantly increasing prices for the same. It has also had to care for wage increases, advances in trucking costs, and miscellaneous items.

The company has a wide variety of rates, some apparently of a promotional variety—this in spite of the fact that there is no surplus capacity in its producing plant. It also transpires that some customers who were induced to use gas on the promotional rates now find themselves reclassified and suffering an increase of 78 per cent or 84 per cent, while other customers are increased far less.

The fuel clause provides for an increase of ¼ cent per thousand cubic feet for each 3 cents per ton increase in the cost to the company of coal delivered to the plant above a base price of $7.66 per net ton. Domestic consumers had in general an exemption of its application to the first 2,000 cubic feet. It applied to all commercial users bar one (C–5). In October of 1943, the charge was 2.9 cents per thousand cubic feet. The April 1, 1948, price for coal at Hermon Siding is $12.50 per ton with 38 cents per ton cost of transportation to plant. This makes a fuel charge of 43.5 cents per thousand cubic feet.

The company's customers are divided as follows:

		1946	1947	
D–1	(all residential)	2,168	2,297	
D–2	(residential using automatic appliance)	653	730	
D–2A	(automatic water or refrigeration)	170	186	
D–3	(central or kitchen heating)	264	272	
		3,255	3,485	
C–1	(any commercial or industrial) 200 cu. ft. min.	177	166	
C–2	(any commercial or industrial) 3,000 cu. ft. min.	100	114	
C–2A	(any commercial or industrial)	34	31	
C–3	(any commercial or industrial) 85,000 cu. ft. min.	12	11	
C–4	(185,000 cu. ft. min.)	13	11	
C–5	(same as D–3)	18	18	
		354	351	
U. S. Government		1	0	
Total		3,610	3,836	6% inc.

The proposed rates were made up to produce $397,000 at current costs (coal at $12.50 per ton). Operating revenues actual were 1943, $200,519.60; 1946, $246,372.10; 1947, $292,771.99.

Expenses for the years 1947 and 1948 were evidenced at the hearing as follows:

	1947 Actual	1947 at December Costs	1948 Original Cost	1948 Revised Sheets
Production				
Operation	206,651.20	226,630	236,260	243,159
Maintenance	22,738.13	23,495	24,370	27,900
Others (Cr.)	71,847.40	71,847	70,930	72,100
	157,541.93	178,278	189,700	198,959
Transmission				
Operation	7,220.77	7,419	6,600	11,075
Maintenance	9,800.22	10,102	11,200	11,200
	17,020.99	17,521	17,800	22,295
Commercial	12,380.12	13,500	14,100	17,100
General and Miscellaneous	41,879.84	42,927	42,900	43,500
Grand Total	228,822.88	252,226	264,500	281,854

The 1948 revised column carries an increase of 10 per cent in wages over 1947 and an increase in the costs of certain materials and supplies of 15 per cent. The 1947 at December costs show the result of 1947 expenses actual figured on the basis of December prices.

The company during the past few years had sold and accounted for the following amounts of gas from coal and oil at the indicated average price.

	1947 M Cu. Ft.	1946 M Cu. Ft.	1945	1944
Gas Produced and Accounted for	220,030	197,916	180,987	173,043
Coal Tons	9,479	9,803	9,224	8,777
Av. price per Ton	$10.39	$8.978	$8.692	$8.48
Oil Gals.	392,573	325,272	269,293	228,878
Av. price per Gal.	$.0837	$.0681	$.0688	$.0738
Residual Cr.	$71,754	$66,685	$66,929	$65,731

(Coke produced also some tar)

The plant has a maximum 24-hour output of from 900,000 to 1,000,000 cubic feet and this amount is used by consumers on peak days during the winter. It has a reserve capacity of 400,000 cubic feet or one-half day on peak.

In a breakdown of operating expenses among other substantial increases we find the item "Salaries of General Officers." This table indicates the growth of this item:

	1942	1943	1944	1945	1946	1947
	$7,431.	$7,116.	$5,036.	$7,952	$12,833	$15,259
of the above Mr. Cahners drew					$11,463	$13,045

It would seem that this business is paying too much for the services of one man, with no previous experience in the gas business. This phase of operating expenses has an element of dividends via indirection. We are of the opinion that we should not close our eyes to reality. Mr. Cahners' "salary" is too large in comparison with the past records of the company and out of line with present operation.

"While the protection of vested rights of property is a supreme duty of the courts, it has not come to this, that the legislative power rests subservient to the discretion of any railroad corporation which may, by exorbitant and unreasonable salaries, or in some

other improper way, transfer its earnings into what it is pleased to call 'operating expenses.'" Chicago & G. T. R. Co. v. Wellman (1892) 140 US 339, 346, 36 L ed 176, 180, 12 S Ct 400.

Bangor Gas Company projects in its estimate of expenses for 1948, $6,000 for "Work on Consumer Premises," in 1947 the amount was $3,000. It was revealed on examination that the requested increase was due to the fact that some official—it was not clear who—had told the company it must make an inspection of all premises using gas. Mr. Cahners said any work resulting from the inspection of consumers' appliances and equipment would be charged to the customer if it was of any importance. Such an expense would not be recurring and we are a little at loss to understand either the necessity or the obligation of the company to incur the expense.

The company has left the 10 per cent increase in wages in its 1948 revised exhibit in a most unsatisfactory manner. No wage increase has been agreed upon between the company and its employees, excepting the superintendent and a new office manager at $5,000 per annum. Of course, if the Commission allows the rate increase, including the 10 per cent, the company will without doubt pass it on. This Commission knows nothing of the merits or demerits of the proposed 10 per cent wage increase. We shall not consider this abortive proposal.

We are satisfied that an attempt at detailed criticism of the other accounts would not be very profitable but we do believe the increases have not lost anything in their computation.

The company uses a formula for depreciation which subtracts from 15 per cent of gross revenues the amount spent for maintenance of production plant and transmission line, the balance being credited to depreciation reserve. Figured on this basis the percentage of fixed assets, credited to the depreciation reserve has been 1942, 1.54 per cent; 1943, 1.9 per cent; 1944, 1.36 per cent; 1945, 1.29 per cent; 1946, 1.09 per cent; 1947, 1.58 per cent, an average of 1.46 per cent. The present case illustrates what happens to depreciation when figured in the manner obtaining with this company. In its 1948 estimate (p. 28) the company has depreciation required as $23,960. Since 1945 the largest amount credited to depreciation by the company was, in 1947, $15,877, the smallest $10,568. Why the plant should depreciate more just because it grossed more is not either clear or convincing. At present the total fixed assets December 31, 1947, equal $1,005,652, the reserve for depreciation $263,943, or 26 per cent. An average depreciation percentage as taken in the past is fair to customers and company.

In 1942 and 1943 the Commission, after a study of the company's records and accounts, brought about a write-off of some $330,000 in the fixed assets. These are now carried at $1,005,652.74 and we believe represents as near as possible the amount actually invested in the company's plant. With adjustments made for 1948, the company in figuring a basis for return used this adjusted figure minus depreciation reserve and added working capital of $35,550 and materials and supplies $25,500. A rate base of 1948 estimated was evidenced at $806,000 and

a return of $48,000 or 5.95 per cent was requested. We believe this rate base to be fair and reasonable.

[1–3] The return of a utility consists of interest on capital subscribed by the bond holders and dividends or profits to investors who have taken the risk of the enterprise and are finally responsible for its present and future conduct. The fairness of the return is to be tested not alone with reference to the investors but also to the consumers who are interested in good service at reasonable rates.

"The kind of service being rendered by a public utility company has weight on both the questions of return and value." Presque Isle Water Co. v. Itself (Me 1937) 18 PUR NS 385.

"A legally established rate presupposes the furnishing of reasonably adequate and efficient service." Selectmen of Oak Bluffs v. Cottage City Water Co. (Mass 1938) 36 PUR NS 373. See also Re Union R. Co. (NY) PUR1918C 398, 406.

"Rates of any utility have a direct relation to the kind of service provided." Johnstone v Rensselaer Water Co. (NY 1937) 20 PUR NS 417.

[4–8] Mr. Cahners, president and general manager, stated the plant compares unfavorably with modern equipment—that 100 per cent water gas would be produced cheaper. Lewiston Gas Company of Lewiston, Maine, a water gas plant of very similar fixed assets to Bangor Gas has a low bracket of gas rates of approximately 70 cents per thousand cubic feet as contrasted with Bangor's $1.20 per thousand cubic feet. We realize it is perhaps not of fair probative value to compare companies' operations and there are many elements that lend to the unreliability of comparisons but it is most apparent to this Commission that the Bangor management is less efficient than Lewiston. The company has a daily output of 900,000 to 1,000,000 cubic feet. There are days in the winter when the customers take this amount of gas daily. The company's reserve capacity is 400,000 cubic feet or about one-half a day's consumption during peak periods. The company should provide better protection to its consumers in case of a breakdown. Probably in excess of 300 customers use gas for heating—one customer has eleven apartments. How many people depend on the company for keeping warm during the winter is not known but it is large. These people have invested in gas-type heaters at considerable expense and they now find themselves in a precarious situation. A breakdown is not to be unexpected, especially when everything is being forced to the limit.

At the hearing the Commission was informed of no plans to help this situation—if a propane gas standby of some sort were practicable we do not know it from anything told us by the officials of the company. It apparently plans no additions to capital in 1948, of any material amount.

Mr. Cahners says it would cost $250,000 to modernize the plant. In our opinion much could be done for half that amount. But, says the witness, the people holding the present debenture (original $300,000 October, 1941), (now $264,000 December, 1947) want earnings of two and one-half times required interest for a yearly period on outstanding bonds old or to be issued, further complicated by the fact additional bonds are to be issued only to extent of 60 per cent of prop-

erty additions. Further, Mr. Cahners remarked that banks might make a loan if the company had credit (produced by proposed rates). He says that if the income is sufficient, it will give the company a chance to put in modern equipment and operate more economically—that a water gas operation would save on labor costs as well as in other ways. This company spent $111,886 in employees compensation to produce 227,551 thousand cubic feet of gas. We would like to omit the comparison but cannot resist saying Lewiston Gas Company spent $152,868 in employees compensation to produce 446,352 thousand cubic feet of gas.

New customers will without doubt come onto the gas lines in 1948, production of gas will, according to the company, remain about the same, new and cheaper production is called for—a satisfactory reserve supply is a necessity to protect the public. The company advances the thought that the customers should pay inflated and excessive rates, a 6 per cent return, a much larger than usual depreciation, a $13,000 salary to its president, in other words, treat the company as if it was doing the type of work that an acceptable utility should do. Should customers pay rates like those proposed for a period of time most indefinite, while the company hope to acquire credit to do the improvements it is bound to do?

It seems to us to be indefensible for the company using inadequate, expensive, and obsolete equipment, permitting peak uses to occur with such little reserve for breakdowns, to be permitted to earn the same rate of return as a company rendering up to date service in quality, quantity, and price.

The decided cases follow a definite pattern. Increased rates will not be put into effect until the utility has made the necessary improvements. See Re Cass County Teleph. Co. (Mo 1942) 42 PUR NS 48; Re Hudson Prairie Teleph. Co. (Wis 1939) 29 PUR NS 230; Shelley v. Thompsontown Water Works (Pa) PUR1927A 494.

In the Hudson Case the Wisconsin Commission said: "We feel that the telephone subscribers should not be expected to pay the increased rates if adequate and satisfactory service is not supplied by the company."

In Re Guilford Water Co. F. C. 136, Feb. 18, 1920, the Maine Commission said that before a utility company is entitled to a fair return upon the property used in the public service, it must show that it is rendering the kind of service which warrants a fair return.

The company used an outmoded and obsolete type of vehicle, costly to operate. The applicant contended that the cost of operation alone, which meant the abnormal and excessive cost of operating an obsolete cable railroad must be controlling. The Commission was not able to accept this view, it said: "The rate must be just, fair, and reasonable, not only to the utility but also to the ratepayer." Re California Street Cable R. Co. (Cal 1944) 56 PUR NS 362, 378. See also Re Los Angeles Gas & E. Corp. (Cal) PUR1919D 140, 148 to same effect.

In fact one can go back to Smyth v. Ames (1898) 169 US 466, 42 L ed 819, 18 S Ct 418, and be advised that reasonable utility rates cannot result in charges for any utility service which are more than the service is worth to the customer.

Several people testified to the effect that poor, inefficient service was being rendered and that the proposed increase in price would drive them out as gas users. It is hard to evaluate such latter statements but with the availability of electricity and propane gas as well as oil and coal as competitors, the limit may be reached in the company's proposed rate schedule for many types of customers.

"A utility must be efficiently and economically operated as a condition to the exercise of its right to impose rates that will yield an adequate return." Public Utilities Commission v. New England Teleph. & Teleg. Co. (RI) PUR1926C 207, 208.

Rates must be just and reasonable. One cannot expect the public to pay rates calculated to produce a fair return on unnecessary property, extravagant construction, antiquated equipment furnishing inadequate service by ancient methods discarded by the intelligent progress of the art. Re Michigan State Teleph. Co. (Mich) PUR 1921C 545.

Among other ideas advanced to increase the prosperity of the company were rules relating to main extensions and service pipes. Both these rules are common to other gas companies in this state. The adoption of them would save "substantial" sums to the company. No one hazarded a guess as to how much "substantial" would be in actual dollars. Nowhere was any credit given for the anticipated savings, or increase in revenues.

The Commission is satisfied after weighing all the testimony offered that there should be established rates that will produce about $350,000 annually. This amount is $47,000 less than proposed by the company.

In figuring its income tax to the Federal government the company uses different figures than those shown in their annual report to the Commission. The amount of the annual depreciation always has been less than that presently proposed. We have mentioned the salary angle. Keeping these factors in mind and the type of service being rendered, it is our opinion that the return will be adequate and commensurate in value with what is being offered by this company.

[9] The Commission considers that the discount for prompt payments are in their nature penalties and discriminatory—one can be charged 30 cents on $1.50 or 30 cents on $3. Very few utilities now offer discounts. They are constantly being removed from rate schedules. See Re Augusta Water Dist. (Me) PUR1925B 234.

[10] The company has a rule regarding prepayment meters, but has no such meters and does not intend to have any in the future. The rule should be eliminated.

In view of the over-all picture the company offers no justification for the D–2a or C–2a rate. These rates as noted are used by 217 customers and are on the face of them discriminatory. The company asks for their cancellation—the Commission concurs.

OHIO PUBLIC UTILITIES COMMISSION

Re C. D. Moore et al.

I & S Docket No. 196
February 6, 1948

INVESTIGATION *of operations of motor carrier; cease and desist order issued.*

Interstate commerce, § 8 — What constitutes — Motor carrier service — Effect of crossing state line.

Commerce carried on by motor carriers between points in a state may be regulated by the state Commission, notwithstanding the fact that along the route of shipment, either by back-tracking or other deviations from a normal and direct route, the shipments are transported to another state before reaching their destination, for the purpose of convenience of the carriers, since such an operation retains its intrastate character.

APPEARANCES: Noel F. George, for C. D. Moore; Charles F. Iden, for Pittsburgh Wheeling Truck Service, Inc.; J. F. Atwood and E. J. Shover for Intervenors, White Transportation Company and International Motor Freight.

By the COMMISSION: Investigation was instigated upon the Commission's own motion as to the transportation of property between points in Ohio by joint operation of the carriers named.

Hearing was had before Attorney Examiner William V. Blake under date of April 29, 1947. No brief was filed.

C. D. Moore is holder of a regular route Certificate No. 1168, providing for operation over a regular route extending generally between Bridgeport, Martins Ferry, and Hopedale, all in Ohio. Interstate authority is also held over same route terminating at Wheeling, W. Va.

The Pittsburgh Wheeling Truck Service, Inc., is holder of acknowledgment of Registration No. 3834 RX, indicating authority of Interstate Commerce Commission for operation in Interstate Commerce over Ohio highways between Cleveland, Ohio, and Wheeling, W. Va.

The question here involved is whether or not shipments originated at Cleveland, Ohio, and Akron, Ohio, by Pittsburgh Wheeling Truck Service, Inc., and transported by them to Wheeling, W. Va., where they are interchanged with C. D. Moore for transportation and delivery at Wellsville, East Liverpool, Piney Fork, Dillonvale, and Adena, all in Ohio, is transportation under the authority held severally and jointly by these carriers. Incidental to this question is whether

or not the transportation across a state border for the convenient interchange of traffic converts a movement between two points in Ohio to an interstate movement.

There is no agreement as to assessed rates used in this transportation. Pittsburgh Wheeling insists that all shipments were assessed the Wheeling rates upon the basis that all points were intermediate to Wheeling but not on their route. Moore advised that rates published for Ohio intrastate carriers were used though Pittsburgh Wheeling was not a party. The rates charged were not the Wheeling rates published by or for the Pittsburgh Wheeling, nor is there any authority to use interstate rates to determine the applicable rate between two points in Ohio.

"Following the decision of the Supreme Court of the United States in Louisville & N. R. Co. v. Eubank (1902) 184 US 27, 46 L ed 416, 22 S Ct 277, this Commission has held repeatedly . . . nor the intermediate rules contained in a tariff, applicable to Ohio intrastate traffic, can be predicated upon an interstate rate." Fort Pitt Tool & Supply Co. v. Big 4, Docket 7712, decided December 5, 1932.

Both of the carriers maintain terminals in Wheeling, W. Va., but neither maintains terminals at any point in Ohio common to both.

It is contended that the interchange of shipments at Wheeling, W. Va., makes the transportation interstate commerce. The terminal at Wheeling is located there for the purposes of carriers operating convenience.

It is our opinion and we find that commerce carried on by motor carriers between points in the state of Ohio must be regulated by the Ohio Commission and that movement of shipments originating in Ohio and destined to other points in Ohio which are by back-tracking or other deviations from a normal and direct route transported to another state before reaching their destination, for the purpose of convenience of the carriers because of location of terminal or interchange arrangements constitute intrastate commerce.

It is *ordered*, that C. D. Moore and Pittsburgh Wheeling Truck Service, Inc., cease and desist providing service and transporting shipments between points and places in the state of Ohio under the subterfuge of interstate authority.

Industrial Progress

A digest of information on new construction by privately managed utilities; similar information relating to government owned utilities; news concerning products, supplies and services offered by manufacturers; also notices of changes in personnel.

New Jersey Pwr. & Lt. to Spend $17,450,000 on Expansion

EXPENDITURES of New Jersey Power & Light Company for new construction during the next three years will amount to $17,450,000, according to a recent announcement.

The outlays will be made partly in connection with projects that will be completed in later years. The company contemplates the expenditure of $7,800,000 this year, $7,250,000 in 1949, and $2,400,000 in 1950.

About $9,860,000 of the estimate of expenditures for 1948 through 1950 is for new power plant facilities.

Also included in estimates of 1948-1950 expenditures are about $3,760,000 for substation and transmission line facilities required because of load growth, about $2,080,000 for distribution plant improvements and extensions and the balance of about $1,750,000 for meters, services, transformers, and other miscellaneous property and equipment.

Cincinnati Waterworks Has Large Expansion Program

ELECTRIC drive equipment for pumps which will increase the available water supply of Cincinnati, Ohio, by 150 million gallons daily is being built by the General Electric Company for the Cincinnati Waterworks, it was announced recently.

This is the first phase of a five-year multi-million dollar improvement program previously approved by the Cincinnati city council. The equipment will be installed in the new Tennyson avenue pumping station, which will be built at a cost of over $1,000,000.

Fel-Pro Offers Sample of 1800° "Hi-Temp" Thread Compound

COMPLETE details and a free sample of the new Fel-Pro "Hi-Temp" Thread Compound, that is said to prevent freezing and galling of metal surfaces at temperatures as high as 1800° F., are now being offered by the Felt Products Mfg. Company.

The new C-5 "Hi-Temp" Compound, according to D. B. Grasett, manager of the packing division, was developed specifically for high temperature and pressure applications, such as furnace tube heater studs and plugs. It is said to greatly minimize shut-downs or dismantling time, stop high temperature thread galling and costly stud breakage. The data sheet cites the case of a large utility company that experienced extreme difficulty in removing studs on the world's largest steam turbine. With the application of Fel-Pro "Hi-Temp," expensive stud breakage was completely eliminated.

A free sample can of the material plus complete information may be obtained by writing the Felt Products Mfg. Company, Dept. P-175, 1504 Carroll avenue, Chicago 7, Illinois.

New "Cleveland" Trailer Offers Speed, Convenience and Safety

THE CLEVELAND TRENCHER COMPANY of Cleveland, Ohio, have just announced their improved Model T-10 equipment and material-hauling trailer.

The T-10 is a flat bed, 2 axle front loading model designed for moving overhead shovels, rollers, tractors, cranes, trenchers, bull dozers, back fillers, front end loaders, machinery, pipe, steel, lumber, etc.

Some of the more important features of the Model T-10 Cleveland Trailer listed by the manufacturer are:

This trailer requires no special type vehicle

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for the hauling. Any ordinary dump, stake or tractor truck or rubber-tired industrial tractor will do the job quickly and easily over any terrain on which they will travel.

Extremely low loading height (under 24") minimizes all bridge and overload wire problems and enables the user to keep within all federal and a majority of state road laws.

An attractive, illustrated folder giving complete specifications and details may be obtained from the manufacturer.

Catalogs and Bulletins

Elliott Company

The Condenser Department of Elliott Company, Jeannette, Pennsylvania, has just published Bulletin C-9 (16 pages) on their Type F surface condensers. Built in sizes from 500 to 15,000 sq. ft., the Type F surface condenser is available in both divided and non-divided water-box types. Bulletin C-9 includes data on condensate pumps, steam jet ejectors, duplex drainers, air leakage meters, as well as a pressure-temperature conversion table, chart for determining logarithmic mean temperature difference, and condenser formulas.

Robins Conveyors

Robins Conveyors Division Hewitt-Robins, Inc., has just issued bulletin No. 125-A. Two pages of pictures illustrate twelve popular units manufactured by the Robins Conveyors Division. The back page briefly describes its entire line of materials handling machinery. Bulletin No. 125-A serves as a ready reference "catalog" of items utilized in the handling of bulk materials in quantity.

Babcock and Wilcox Tube Company

Publication of a new edition of its bulletin on B & W Croloys giving technical data on high-temperature steels for alloy tubes and pipe has been announced by the Babcock & Wilcox Tube Company, 85 Liberty St., New York City.

The bulletin offers condensed information in chart form on such factors as creep strength, short time tensile strength, oxidation and corrosion resistance, temper embrittlement, and minimum physical properties.

Benjamin Mfg. Company

"The first truly comprehensive bulletin on the popularly acclaimed new louvered ceiling lighting system," is the way Benjamin announces its new "Sky-Glo" bulletin, just issued. "Publication of the 28-page manual," the announcement points out, "coincides with the beginning of a 'Time for Sky-Glo' program, which is being spearheaded by full-page advertisements in several national magazines."

Bound in Vinylite plastic—the same material of which "Sky-Glo" louvers are made—the bulletin contains many illustrations, photographs, architectural drawings, engineering charts, and specification tables. Included are the outstanding features of "Sky-Glo."

Free copies of the bulletin may be obtained by writing to Benjamin Mfg. Company, Dept. N.R., Des Plaines, Illinois.

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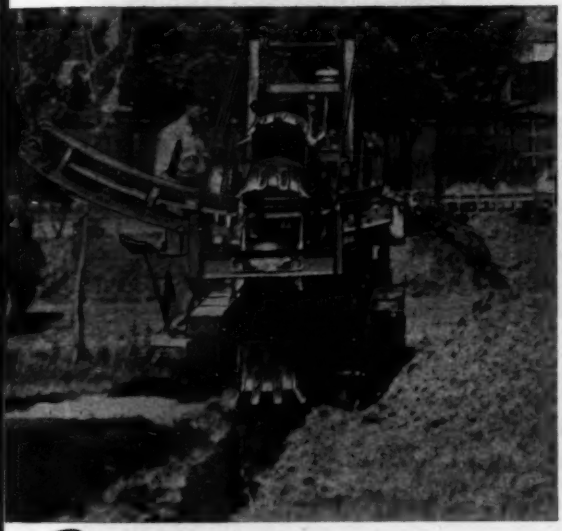

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"Pittsburgh's" Store Modernization Caravan

exemplifying the new trend in store design and modern lighting techniques

A NOVEL exhibition-on-wheels, the Pittsburgh Store Modernization Caravan is of interest to everyone having anything to do with retailing. Employing two truck-driven 26-foot trailers, it is a practical as well as an exciting show.

Here is a twelve-unit exhibit (each trailer holds six models) which demonstrates through "true-to-life" scale models, the latest advances in store front and interior designs, and in modern lighting techniques. Designed by a nationally-known authority, the lamps and fixtures are accurately proportioned to duplicate in miniature the actual conditions met in store illumination. This Pittsburgh Store Modernization Caravan shows how present structures, as well as new buildings, can become even more effective through proper lighting and proper design.

Make sure that you visit the Pittsburgh Store Modernization Caravan when it reaches your city. Watch for its coming.

TWELVE SCALE-MODELS of distinctive store designs, like the one illustrated here, comprise the Pittsburgh Caravan. Each model is complete in every detail and simulates actual store conditions. Store exteriors, windows, interior arrangements, and lighting are accurately reproduced.

"PITTSBURGH"
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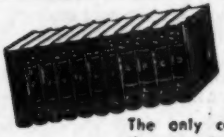

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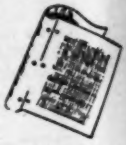

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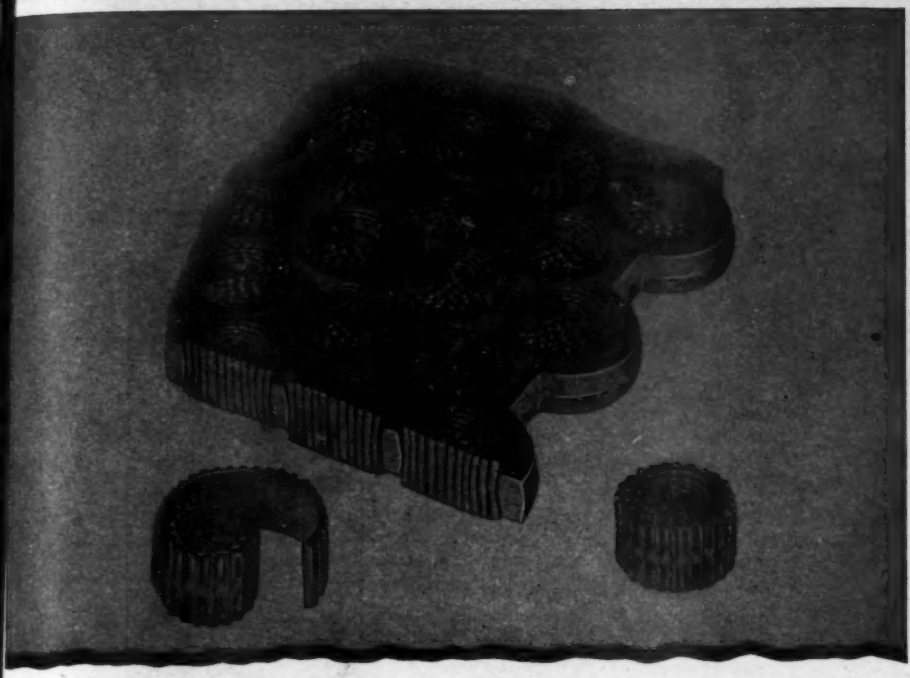

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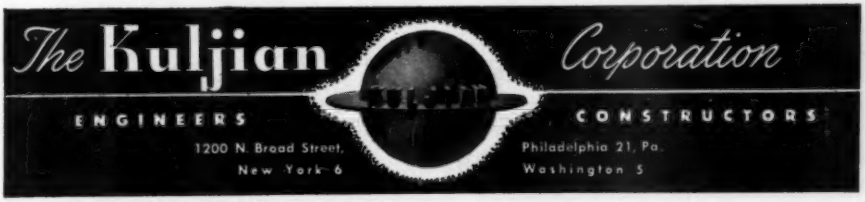

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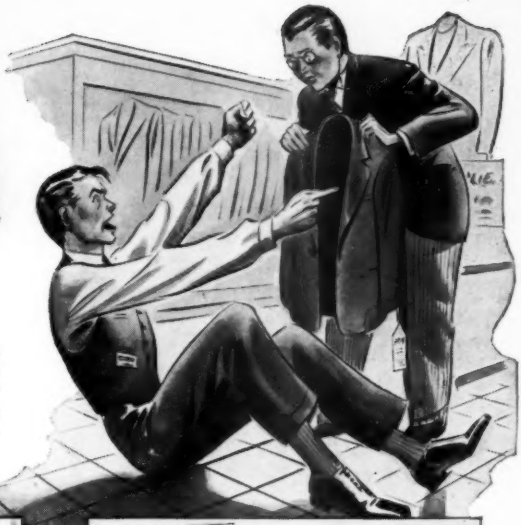

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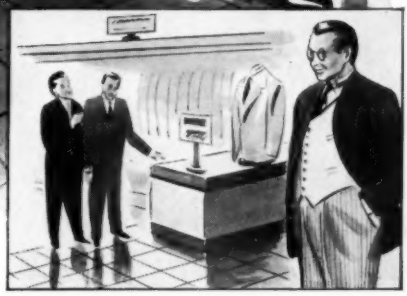

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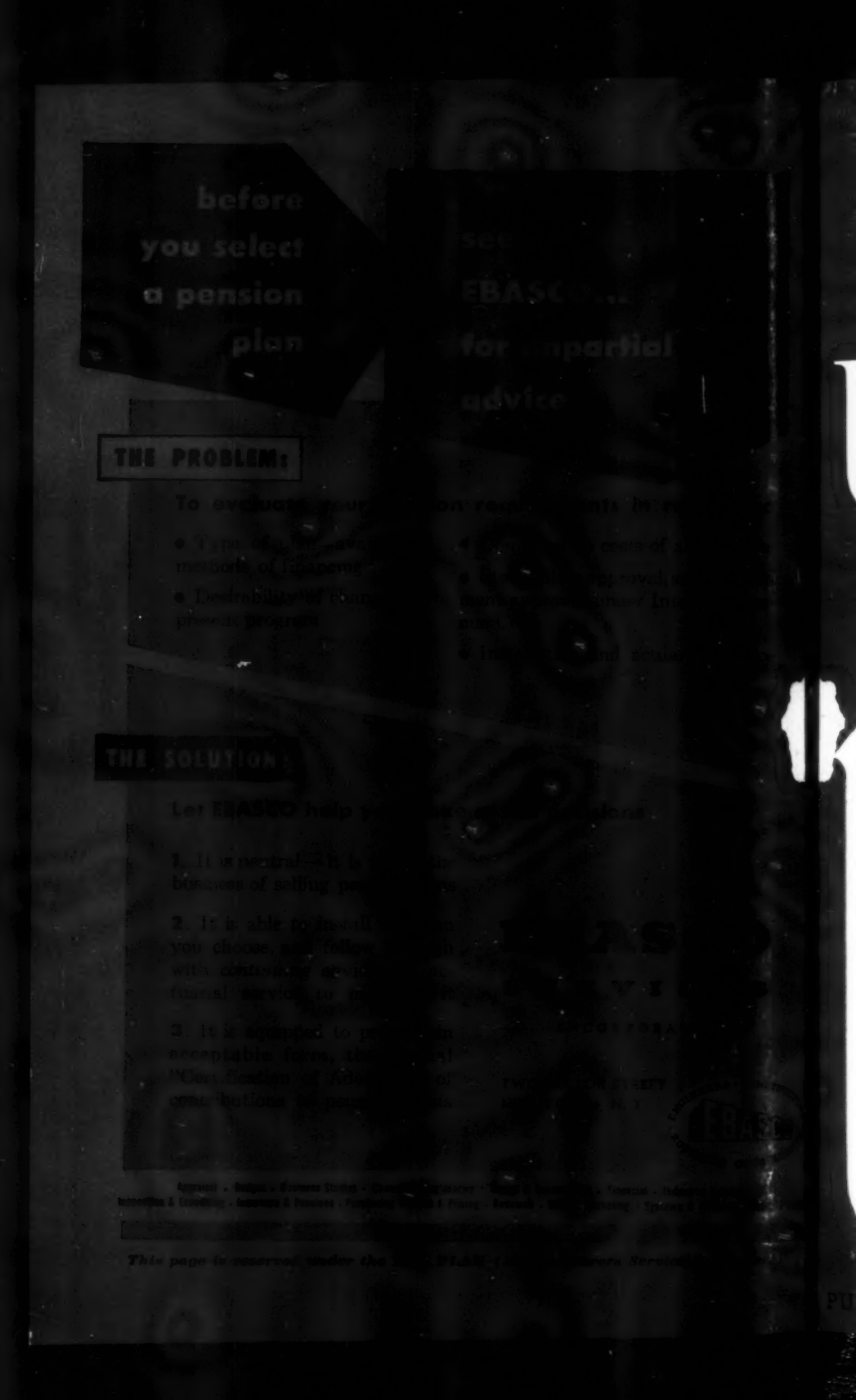
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